











# The Journal

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# The Journal OF Nervous and Mental Disease

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## Original Articles

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### THREE CASES OF FACIAL SPASM TREATED BY INJECTIONS OF ALCOHOL<sup>1</sup>

BY HUGH T. PATRICK, M.D.

OF CHICAGO

To describe facial spasm is no part of this paper, but before making my short report on a new treatment it may not be amiss to mention a few points of distinction between facial spasm and facial tic because, while there is a superficial resemblance of the two affections, they are fundamentally different and the treatment appropriate for one is not in the least applicable to the other. By facial tic, of course, I mean motor tic, *tic convulsif* or habit spasm; not trifacial neuralgia or *tic douloureux*.

Both disorders belong to the hyperkinesias, both present an intermittent, painless twitching and contraction of facial muscles, both are or tend to become chronic and both cease during sleep.<sup>2</sup> Here about all common traits cease. The following are the chief contrasts, very briefly stated:

1. Tic is much more common than spasm and invariably develops in a nervous or neuropathic individual. Disposition or temperament appears to have nothing to do with spasm.

2. Facial spasm is a real spasm, pure and simple; an isolated disorder strictly confined to the mechanism of motor innervation of the face. Tic is not a spasm at all but a volitional movement (even when automatic and subconscious) with extensive psychic

<sup>1</sup> Read at the thirty-fourth annual meeting of the American Neurological Association, May 20, 21 and 22, 1908.

<sup>2</sup> To this there may be rare exceptions in the case of spasm.

and sensory associations. It is a motor obsession, or rather the motor expression or result of an obsession. Consequently:

3. Spasm is absolutely devoid of voluntary or involuntary control while tic is always to some extent under the control of the will and always subject to involuntary control by strong emotional or intellectual preoccupation.

4. To state it another way, spasm may be said to be an anatomical, tic a physiological, disorder. A good picture of facial spasm may be obtained by faradization of the facial nerve. Tic is always the replica of a perfectly natural (though may be unusual) and physiological movement. Looking at the distortion caused by faradization of the nerve no one would mistake it for voluntary contraction of the facial muscles. On the other hand, having seen only one individual contraction of facial tic, no one could say that the movement was not a perfectly normal and natural one—possibly unusual, possibly overdone, but the legitimate result of a casual cause. Voluntary imitation of facial spasm is practically impossible. The patient himself can always repeat or imitate his tic movements and another person can nearly always do so.

5. In harmony with the anatomical relations of spasm are the facts that in its incipency it is confined to *part* of a muscle (generally the orbicularis palpebrarum), that eventually it takes in the entire distribution of the facial nerve, no more and no less, and that however bad it may be it is strictly unilateral. In harmony with the physiological relations of tic are the facts that it never affects part of a facial muscle, because we cannot voluntarily make fascicular contractions, that it rarely includes all of the facial muscles in any given movement, that one physiologically associated group of facial muscles may contract one moment and another group the next, that it is very apt to be bilateral either simultaneously or alternately, and that it is peculiarly liable to be associated with tic of nearby or remote muscle-groups.

6. The contraction of facial spasm is very like that produced by faradism when the vibrator is not running smoothly. That is, while the general effect is tonic there is, besides, a flickering or quivering or rapid, slight, irregular twitching such as never occurs in voluntary movement or tic and cannot be imitated. Each spasm begins with this flickering contraction, generally of part of a muscle and most frequently in the orbicularis palpebrarum.



The preliminary quiver may be exceedingly brief or may last several seconds and even in a fully developed case one often sees these little abortive spasms. Nothing of the kind is seen in tic.

7. Facial spasm may not look any worse than facial tic but it is much more uncomfortable than tic, much more of a disability. The subject of tic may talk and sing as he pleases. To be sure his talk will be interspersed with grimaces but his sentences are not interrupted by them. A patient with spasm may be cut short at any time.

Injection of the seventh nerve for facial spasm was the natural sequence of injection of the fifth nerve for facial neuralgia; the more natural, as the results of all previous treatment of facial spasm were anything but satisfactory. Stretching the nerve was about the only effective method and the common experience was that with return of voluntary motion the spasm recurred with unabated vigor.

The pathology of facial spasm being unknown, no entirely rational treatment is possible. The injection method is empiric, is new and may be found to have disadvantages not now known; but it is exceedingly simple and the results are far better than those of any treatment with which I am acquainted. To suppose that it will radically cure facial spasm seems unreasonable, but that it will stop the spasm is certain and that this relief will persist for a considerable time after the facial palsy incident to the treatment has disappeared, is also definitely known. Of course the great drawback to the treatment is the facial paralysis which it causes, and for this reason the method is scarcely applicable to very mild cases which are scarcely more than a slight inconvenience for the patient. I have injected only three of the seven cases which I have seen since learning of this method about two years ago. For a knowledge of alcohol injections for facial neuralgia and for facial spasm I am indebted to the French school, notably Prof. Brissaud and the clinic of Prof. Raymond.

CASE I.—Mrs. W., colored, widow, 38 years of age, in excellent general health, was first seen September 17, 1907. Facial spasm began in 1894 or 1895 as a slight twitching of the left orbicularis palpebrarum. Gradually the trouble increased in severity and extent until the spasm distorted the entire left side of the face. About two years after the beginning of the spasm she apparently had an otitis media on the left side with rupture

of the drum head and offensive discharge for some time. Under proper treatment the otitis was cured. It seems to have had no effect upon the spasm.

Examination showed typical facial spasm, intermittent and varying considerably in frequency. The contraction was practically tonic with coincident slight twitches or quiverings. In



FIG. 1. Case I. Typical facial spasm.

duration it varied from a few seconds to about one-half minute. Sometimes it ceased for as much as an hour, sometimes recurred so frequently as to be almost constant for many minutes. Figure 1 gives an excellent picture of it.

On September 19, with an ordinary long hypodermic needle I injected 15 to 20 minims of 75 per cent. alcohol containing a

little cocaine. The injection was made immediately in front of the mastoid process, the object being to reach the nerve at its exit from the stylo-mastoid foramen. The spasm ceased at once and at the same time facial paralysis became obvious. In a few moments the paralysis was practically complete and involved all branches of the nerve.



FIG. 2. Case I. Six and a half months after treatment. Patient smiling to show absence of facial paralysis.

On October 2 the patient presented an ordinary peripheral facial paralysis. She had had no signs of the spasm except on the third day when she had noticed a very slight twitching about the eye. The paralysis was no longer complete, as with an effort she could close the left eye, but she could not pinch the lids

together. The lower branch seemed to be quite paralyzed, although the patient said she could eat with but little trouble. Even at this time she much preferred the existing facial paralysis to the previous spasm. Three weeks later the facial paralysis was less pronounced but still quite marked. The patient was not seen



FIG. 3. Case I. Same date as Fig. 2. Patient voluntarily contracting facial muscles to show absence of facial paralysis.

again until March 7, 1908, five and a half months after the operation, when the facial paralysis had practically disappeared. She, herself, had not been conscious of any paresis for a long time.

Figs. 2 and 3 are from photographs taken March 31, Fig. 2 whilst the patient was smiling, Fig. 3 whilst she was tightly closing the eyes and spreading the mouth as if to show the teeth.

Close scrutiny at this time revealed a very slight difference in movement of the two sides of the face, a difference which ordinary casual observation certainly would not detect. May 15, 1908, there was still no spasm.

CASE II.—A man of 64 years was first seen September 24, 1907. For eight or ten years he had been slightly deaf in either ear, no tinnitus. About four years ago his facial spasm began with a slight twitching about the right eye. At first there were intermissions of several hours. The area involved very gradually increased, the corner of the mouth having begun to draw only six or eight months before. The spasm in this case was not so severe as in Case I, but was sufficient to completely close the eye for about a minute and to draw the corner of the mouth very markedly to the right. Intervals between spasms were rarely more than a few minutes.

An injection was made as in Case I but with alcohol of only 40 per cent. There was no immediate effect but about a minute after the injection I noticed very slight facial paresis and the spasm ceased, but within twenty minutes the facial paresis disappeared and at the same time the spasm began. An hour after the injection the facial spasm was very distinct, although not quite as bad as before the injection. Evidently I had missed the nerve. On November 13 I made another attempt and because this patient was very hypersensitive and made a great ado about the pain caused by the injection, I foolishly used a very slender and quite short hypodermic needle. This was unnecessary as the injection was made painless by previous injection of a little cocaine in normal salt solution, and I believe the needle was too short to reach the nerve. At any rate the nerve was not reached, the result was *nil* and the patient returned to his home in another state, apparently with no benefit. Furthermore, 12 days later he called on his home physician with the auditory meatus full of bloody pus. The tissues of the canal were infiltrated and a small bit of cartilage came away. In a week all was healed with no bad effects. It seems reasonable to suppose that the cocain solution was not sterile. Possibly there was some other source of infection, but the process had no effect upon the spasm.

CASE III.—A man, 32 years old, was first seen October 28, 1907. The facial spasm had begun with a slight quivering about the left eye three years before. A year before it had begun to affect the face below the eye and three or four months before had involved the entire cheek and corner of the mouth. Although the muscular contractions were not so strong as in Case I, the intervals between the spasms were exceedingly short, and when the patient was talking or eating the spasm was almost continuous. In this case as in the others, I explained to the patient that the injection would cause paralysis of the affected side of the face, and advised him to see the first patient, whom he happened to know.

On December 3 he returned for treatment and I injected about twenty minims of 40 per cent. alcohol, preceded by a very weak solution of cocaine in normal salt solution. The injection of the alcohol was painless, but evidently I did not strike the nerve as the paresis induced was very slight and there was only very transient cessation of the spasm. On December 5 no trace of paresis could



FIG. 4. Case III. Five months after treatment. Patient smiling; shows no facial paralysis.

be discovered, although the patient said that the spasm was somewhat better. I injected fifteen minims of 40 per cent. alcohol, but missed the nerve. On December 16 I injected twenty minims of 50 per cent. alcohol and evidently reached the nerve, as there was almost immediate complete facial paralysis. At the same time the spasm ceased.

The patient passed from observation and it is only within the last few days that I have succeeded in locating him. His statements as to when the facial palsy disappeared are vague and unsatisfactory. Evidently it ceased to trouble him after a short time. At present careful examination detects a scarcely appreciable facial difference. Even in laughing and strongly con-



FIG. 5. Case III. Same date as Fig. 4. Strong contraction of facial muscles shows no facial difference.

tracting the facial muscles the difference is not so marked as many normal persons habitually display. There has been no return of the spasm. Figs. 4 and 5 are from photographs taken May 15, just five months after the last injection. Fig. 4 shows the patient

smiling and Fig. 5 as he is tightly closing the eyes and strongly retracting the corners of the mouth as in showing the teeth.

As the photographs demonstrate, the results in Cases I and III up to this time may be said to be ideal. Should the spasm return, as I believe it may, I see no objection to repetition of the treatment, just as I have repeated it in recurrence of trifacial neuralgia. Needless to say, the failure in Case II was not due to the method but to the operator.



## PSYCHOTHERAPY AND THE CHURCH<sup>1</sup>

BY CLARENCE B. FARRAR, M.D.

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Hardly have we outgrown the time when to discuss the question of religious therapeutics almost presupposed a lack of seriousness or dignity on the part of the speaker or writer. Faddist faith-cure movements might seem, perhaps, fit matter for hammock reading or table talk, but scarcely suitable to occupy the time of a reputable scientific body, or to place before the readers of legitimate medical literature. While there has indeed been reason for this attitude on the part of medical men, it is nevertheless not wholly justifiable. Everything which affects either mind or body, the physician is bound, first or last, to take into account. Nothing human dare he ignore, and in the various popular movements such as Christian Science, and its recent offshoot in Boston, in the pathogenesis and symptomatology of these movements, if we may so express it, there is material which deserves attention and even deliberate consideration.

During the present generation, the queen bee of all the swarm of religio-psychotherapeutists has been Mrs. Eddy. Before her time, as great a man as Doctor Holmes had thought it worth while to handle, and that without gloves, in one of his famous "medicated essays," certain analogous practices purporting to cure disease, which were based upon conscious or unconscious charlatanry, plus mental suggestion and auto-suggestion. Very recently Christian Science has been deemed worthy of the steel of no less serious a man than Mark Twain; while last of all, the tissue of fraud, spiritual autocracy, hysteria and fanaticism, which constitute the very warp and woof of this cult, has been laid wide open in all its unsavory and ludicrous details, in the elaborately documented articles of Miss Milmine, which have

<sup>1</sup>Read before the Section in Neurology and Psychiatry of the Medico-Chirurgical Faculty of Maryland, Feb. 28, 1908.

been running in *McClure's Magazine* from January, 1907, to June, 1908.

As human and psychologic documents, if on no other grounds, these movements are worth considering; and just now, while the mother science of Mrs. Eddy, synchronously with the patent medicine fraternity, has been getting into somewhat ill odor throughout the states, a Son of the Blood arises in the person of the Reverend Elwood Worcester, of Boston, and from the land of witchcraft and transcendentalism we receive a new gospel.

Worcesterism, or as its reverend founder modestly calls it, the "Emmanuel Movement," from the name of the church of which he is rector, was inaugurated in November, 1906, and thanks to the efficient manner in which it was advertised, it had gained widespread notoriety within six months. Within a year, branch offices had been established in various cities, Bishop Fallows had inaugurated a parallel movement in Chicago under the name of "Christian Psychology," and people began to wonder what waifs next the department church would display upon her counters.

What, then, is this scheme of Christian Therapeutics which comes from Boston? To answer this question, we have ample data in the numerous sermons, public addresses, newspaper interviews, and popular magazine articles which Worcester and his followers have lavishly contributed; and finally, in the official *credo*, "Religion and Medicine," a volume of 427 pages, the joint production of Worcester, McComb and Coriat. The movement is declared to be a combination of theology and medicine, certainly a rare hybrid in these days, a revival of New Testament theory and practice in handling disease, but with the difference that attention is directed specifically to the neuroses and psychoses, and that the methods of treatment are definitely understood to be such as are embraced in the general term, psychotherapy. Let it be stated at the outset, that Worcester has succeeded in enlisting the sympathy and coöperation of certain medical men in Boston and elsewhere, and that at the church "clinics," a physician is in attendance to differentiate the organic cases and to recommend such "functional" cases as may be suitable for religious psychotherapy. That physicians are thus sometimes willing to sell their birthright and to surrender a part of their legitimate province, to hand over impotently to the clergy

for treatment, certain conditions which are just as truly the manifestations of disease or trauma as would be a broken limb or a febrile delirium—these facts are startling enough, but they may be passed over in silence. Our present concern is with the Emmanuel Movement on its own ground.

That the combination of priest and physician working together under the same roof is a formidable one in its passing popular effect is not to be denied. It is calculated to make a strong appeal to a considerable portion of the lay, more especially the feminine mind, and to offer, indeed, a veritable "Rock of Ages" in which their insufficient souls will seek refuge.

"Mental suggestion from a basis of true religion," declares the rector, "is our cure for certain nervous diseases. . . . Our idea is to appeal to them (the patients) from the basis of true religion as it is contained in the New Testament. . . . Our work is essentially ethical and spiritual. Our chief interest in the men and women who seek our care is a moral and religious interest." In short, from all the available literature, it is clear enough that in spite of the proclaimed co-partnership between *materia medica* and theology, it is ever the latter which takes first place; that the part of medicine is that of a tool or subordinate, by whose aid religion proudly sweeps to her reward.

But of this later.

In the meantime, we are somewhat struck with amazement by the very appearance in this avowedly practical and material age, of the anomaly of the priest-physician, so alien is the idea to modern scientific thought. But as we turn over in our minds this apparently novel phenomenon, we become conscious that the idea is not altogether a new or original one, and we finally recollect that the species was in existence 2,500 years ago, and that in the long epoch before the dawn of science, the priest-physician was the only one to whom suffering humanity could go for the treatment of their diseases, whether of body or soul.

Beginning with that remote day, it is illuminating to follow with hurried steps the part assumed by priestly authority throughout the ages till the present day. In the primitive period the priest was the sole minister to all the ailments of humanity, and his means of cure were, in a general sense, the same as those used by his successors of the cloth today; that is, such methods as were directed to the cure of disease of the body by influences

brought to bear upon the mind. A new order of things was established with the advent of the Greek school of medicine. The priest was left in large part his authority in matters pertaining to the soul, but the domain of physical disease was snatched from his hands, never to be returned. It follows, as a matter of course, that the therapeutic methods used by the earliest physicians would be in some measure similar to those of their priestly predecessors. We have, accordingly, in the school of the sons of Æsculapius, a transitional phase, as it were, from priest to physician; and while drugs and various physical measures were employed by them, the psychic element in therapy occupied always a conspicuous place. The Asclepiadæ discharged an important function in the phylogenesis of medicine. That function discharged, there was no further occasion for their existence, and they passed from the scene. But their seed did not wholly die out, and from that day to this, various modifications of their type have reappeared spasmodically in remote places and times, never as elements of progress, but rather as tares in the field of science, and the latest of these anachronisms is now biding its day in Boston.

But disregarding for the moment these occasional type rever-sions, it has remained true throughout the greater part of history that the priest and physician have carried on parallel but distinct activities, working side by side but with a high fence between them, each cultivating his own particular acres; the one attending to the needs of the soul, and the other to those of the body.

From the earliest times, however, it has been clearly recognized that perturbations of the soul (mental diseases) are, in reality, diseases of the nervous system, and more particularly of the brain, and that, therefore, their treatment was the proper work of the physician and not of the priest. We have but to recall the remarks of Hippocrates on the Sacred Disease for evidence of the antiquity of this view. Of late, these facts have been more and more emphatically brought home to our minds; and as our knowledge of both structure and function of the nervous system has increased, so has it become more firmly established and more widely recognized that the mind, or soul, and the brain are simply co-partners in the life history of the individual; there being, so far as we have evidence, no mind or soul, no mental or spiritual life without the physical substratum, the brain.

The physician has become acquainted more and more with the interrelations and interactions of soul and body in health and disease. He has found that he cannot successfully treat the one while neglecting the other, and he has grown aware of the need of an acquaintance not only with anatomy and physiology, but also with normal and morbid psychology. In this way, as facts and rational tendencies have gradually replaced fancy, prejudice and fear, has the sphere of usefulness and duty of the physician broadened, and we feel a tendency strengthening itself in our day, which fully realized, is nothing else than an absolute reversal of the original order of affairs three thousand years ago. Then, the priest was supreme arbiter of both soul and body; later, this authority was equally divided between priest and physician; more lately still, the entire field would seem to be falling more and more into the hands of the physician, to whose care there may one day be entrusted all the ailments of the flesh and spirit of man.

In her noblest and highest reaches, is not this practically the attitude of science today? And yet, for various reasons of personal interest, *laissez-faire*, inherited prejudice, or dread of adverse opinion, we are not always willing to maintain it. There are too many Laodiceans among us.

Schematically, the tendency we have been discussing may be set down as follows. At first view it is startling perhaps, and for its ultimate realization we hardly dare hope. That the tendency exists, however, there is no denying.

- |      |                                   |                      |                          |
|------|-----------------------------------|----------------------|--------------------------|
| I.   | Priest .....                      | { Soul }<br>{ Body } | .....Pre-scientific era. |
| II.  | { Priest .....<br>Physician ..... | { Soul }<br>{ Body } | .....Empirical era.      |
| III. | Physician .....                   | { Soul }<br>{ Body } | .....Rational era.       |

Although from century to century the fortunes of the conflict have varied, the Church has been conducting a steadily losing warfare with Science; but she has never willingly, or with good grace, yielded up an inch of territory. Medical authority, with the prestige and *entr  e* which it assured, was ever particularly dear to her heart; and after she had reluctantly surrendered the great field of bodily diseases, she still clings tenaciously to

the administration of the affairs of the mind. In the part which has been played by every great religious genius or prophet, whether self-elected or the accident of circumstances, wonder cures and faith healing have regularly been the long suit. The New Testament teaches that Christ went about healing the sick and casting out devils; in other words, treating maladies of both body and mind; and in his therapeutic activities, there is no record that he selected certain forms of disease as being most amenable to his influence. His word was a panacea; there was no distinction between functional and organic disorders.

But in so far as we are able to draw conclusions from the records and traditions which have been transmitted to us, we find that his cures were faith cures pure and simple, such as have been wrought by religious and non-religious leaders of all times, whenever they have spoken with the authority of conviction. There is no evidence whatever, that Christ knew anything about medicine, or indeed, about any other science, in spite of the fact that he has been called the "Great Physician."

As a natural result, the church founded on his teachings has had the experience that, as science advanced, she was thrust ever farther into the background. In her repeated attempts to readjust herself as the intellectual horizon of mankind has expanded, she has suffered the throes of bitter intestine wars, has been rent by schism and weakened by defection, until to-day, in every land, her prophetic eye foresees a more sombre future than ever threatened her before. In England, the New Theology has come forward as a son to beat down his own mother whom he could no longer respect. On the continent, similar movements are afoot. The Bibel-Babel tempest in Germany has washed away accredited strongholds of the church, which were found to be built upon sand. Scholasticism is writhing in the clutch of Modernism, and after Modernism ————?

Worcesterism is one of the evidences of this spirit of despair. The people at large have gradually been outgrowing the influence of the pulpit: they are left cold by the promises and the threats of the church. Obviously, new blood is required to reinfuse her with the semblance of life. No one knows this better than the church herself. Hence this latest *tour d'adresse* in which theology tries again to reclaim the healing art, and to reinstate in the twentieth century, the crude régime of the first.

"The time is come," declares Worcester, "when the church must enter more deeply into the personal lives of the people and make a freer use of the means modern science and the gospel of Christ places at her disposal, if she is to continue even to hold her own." "In my opinion," Bishop Fallows is quoted as saying, "the church, to save itself, must begin to minister to the bodies as well as to the souls of the American people." Precisely! In these admissions we detect the essence of the new propaganda; and throughout the land, clergymen are catching at the straw thus offered, preaching a return of New Testament practice, and promulgating the hope that the church is not, after all, outliving her usefulness, and that through religious agencies, can be cured not only nervous and mental afflictions, but all the diseases of the body as well.

But there were also other moments which led up to the spectacular Emmanuel campaign. The cue was taken obviously from Christian Science. The churchmen had noted with envy the phenomenal vogue of this cult, which, they were forced to admit, had far outstripped them in numbers and influence. It was patent that Christian Science was offering something to humanity which the church was not, and this something was the promised relief from sickness and disease. Good! The church should likewise offer to cure disease. Better late than never! But herein lay a great danger to be avoided. In scientific circles, and among the majority of intelligent people, Christian Science was after all looked upon, in popular parlance, as a fake. If the church could take over the trick of Christian Science, and dress it out a little less preposterously, perhaps it could be disguised and palmed off on the public as something original and worthy, and the desired end would be attained.

It was necessary, therefore, to begin by disclaiming all connection with Christian Science. "Do you suppose," asks Worcester, "that the most experienced neurologists of Boston would have approved this movement if it had borne the slightest relation to Christian Science?" Unfortunately, all of his disciples are not carefully schooled, and one observes often enough that their arguments run to cross purposes. Fallows, for example, declares unequivocally, that he uses "the best of Christian Science and the best of materia medica." Worcester evidently foresaw that in turning his Church into a polyclinic, he incurred the

risk of becoming ridiculous. Just at this point he achieved his master stroke.

This consisted in employing certain physicians as assistants on his "staff," thus lending an air of medical respectability to what might otherwise have been a fiasco. The weak point in Christian Science, namely, its antagonism to legitimate science, was repeatedly pointed out. Worcesterism, on the contrary, accepted the reality of matter and of physical disease. Knowing, however, that an intelligent public would no longer unquestioningly bow to theologic authority in these matters, and realizing that the old theocracy was inevitably crumbling, the brilliant maneuver with which we are familiar was executed. It was nothing else but a bold and triumphant gasconade. A truce was sounded and science was bidden to a parley. The church assumed a patronizing attitude and invited science to *aid* in carrying on a work which science was in the habit of looking upon as peculiarly her own, and in which it had not occurred to her to seek assistance from the church. The bait was cleverly prepared, but it may be assumed that the critical palates of the medical profession at large will promptly reject it. "Its relation to scientific medicine," declares First Assistant McComb, speaking of Worcesterism, "is not one merely of non-opposition, but of enthusiastic alliance." The character of this "alliance" has already been referred to. "The main idea of the Emmanuel Movement is moral and spiritual and religious, and its main principle is faith." More specific is McComb in a late pronouncement.<sup>2</sup> "Christ, who was not only the greatest of teachers, but an ever successful physician as well, achieved his mighty deeds through the faith in God, which was the secret of his own life, and which he sought to awaken in the sufferer."

The natural result is that *prayer* should be one of the strong points of the new Boston therapy, and this idea is clearly set forth. "It follows that this trust in God will find natural expression in prayer. . . . To teach men to pray so as to win the good which such a movement of the human spirit brings is one of the purposes for which the Emmanuel clinic has been founded."

That auto-suggestion is a potent factor in the relief as well as in the causation of symptoms is of course a banal observation. *Only, let it be called by its correct name.*

<sup>2</sup> Century Magazine, March, 1908.



Tourguéneff, in one of his exquisite Poems in Prose, entitled "Prayer," observes: "Whatever a man may pray for, he prays for a miracle. Every prayer comes to this: 'Great God, let twice two not make four.' Only such a prayer is a real prayer, face to face. To pray to the Spirit of the universe, to the Supreme Being, to the abstract, unreal God of Kant or Hegel, is impossible, unthinkable. But can a personal, living, imaginable God make twice two other than four? Every true believer must answer, 'Yes, He can.' And he is obliged to convince himself of it. But what if his reason rebels against such nonsense? Then Shakespeare comes to his aid: 'There are more things in heaven and earth, Horatio.' But if you seek to controvert him in the name of truth? He has merely to repeat the well-known question, 'What is truth?' And so, let us eat, drink and be merry—and pray."

But Worcester admits that we should not pray for miracles. He admits that the scope of prayer has been steadily narrowed by the advancing domain of Natural Law. We behold it reduced almost to a geometric point. However, "even if you are convinced that no prayer of yours can quiet the storm or augment your fortune, or check the dreaded development of the disease which is taking your loved one from your sight, are there no storms within your own soul which prayer can quell?" Even so! But again let us not do violence to the canon of Lloyd Morgan. Again substitute the word "auto-suggestion," and we are agreed.

After a discussion on "suggestion," which might have been taken from any current text-book of psychotherapy, except for the fourteen capital I's in a single page, the author of "Religion and Medicine" remarks: "I ought perhaps to add that I personally attach a religious importance to this state of mind." (That of suggestive receptivity.)

From every point of view it is clear, after searching the scriptures of Worcesterism, that in spite of its medical advertising, the organization is strictly and essentially religious, that its object is to renew the waning prestige of the church, and that its trick is to offer suffering humanity a theologic pill to purge melancholy, after making it a little more palatable to our modern consciousness by means of a thin medical sugar coating.

Judging, however, from the considerable stir which the Em-

manuel "clinic" has aroused, it would appear that there is a popular demand for this new theologic pill; and herein lay another finesse with which Worcesterism must be credited. We are conscious that in late years in medical teaching, profound changes have come about in the doctrine of therapeutics. Born of mystery, this science has been passing through a tedious age of empiricism, and is gradually emerging into an era of rational practice. Characteristic of this age is the passing of polypharmacy.

One of our patients, who has known many doctors in his time, takes delight on every possible occasion in repeating the well-known quotation that "a physician is a man who pours drugs of which he knows little, into a body of which he knows less, to cure a disease of which he knows nothing." Happily, the therapeutic drug habit is gradually receding, and at the same time an interest, never wholly dormant, has been vividly awakened in the possibilities of psychotherapy, resulting in a greatly widened scope and more specific, elective and rational application of this means of treatment.

The bane of mental therapy, as practiced by the earlier healers, hypnotists and magnetisers, was the mystery with which it was enveloped and the facile quackery in which it too often resulted; and precisely these have ever and inevitably been the conditions of mind healing as practiced by the church.

The ventilation of the subject and its establishment on a scientific basis, we owe preëminently to the school of Nancy, to the work of Liébault in the past generation, and that of Bernheim in the present. Rational suggestion is the product of the new movement. It has demanded and received a steadily extended recognition, and just now is being illuminated in a practical way by numbers of our best clinicians the country over. But what, we may ask, has been the actual state of affairs along the firing line of the profession during this period of readjustment? What, with regard to a large class of patients, is the effect of the waning faith in drugs? Drugs have hitherto constituted the chief ammunition of a multitude of physicians, and workers who are used to one set of tools do not readily adapt themselves to an entirely different set. Psychotherapy, therefore, in its broader usefulness, has remained in the hands of the few. It is a subject which has not been taught in the medical schools. Obviously there is a con-

spicuous group of patients, representing largely the various neurotic and psychotic states, which, not being relieved by internal medication, have been more or less neglected. These cases, which are by every right subjects for medical attention, the practicing physician has even studiously avoided. What wonder that many of them fall victims every year to quackery, that they seek from every wind that blows the relief which is so elusive? Such have been the conditions which led up to the psychologic moment when Worcester contrived his spectacular entrée. Setting forth on the one hand the incompleteness and contradictions of Christian Science, he has, on the other, emphasized an existing defect in legitimate medicine; and with Christian Science as the ill-concealed foundation, his ambition would use medicine as the ladder for the erection of his religious superstructure.

And what is the method of the new cult? In the limelight publicity with which it surrounds itself, in its alarmist proclamation of the alleged spread of nervousness among the populace, in its open exploitation of all sorts of morbid symptoms, is not Worcesterism appropriating the method of the nostrum advertiser, who either in his paid-for newspaper notice, or by the light of a gasoline torch, describes to the gaping public the alarming symptoms of various diseases from which many of his hearers or readers promptly believe themselves to be suffering, with the result that they eagerly grasp at the god-sent panacea, at so much per bottle? We read in the press reports of a séance in Philadelphia, "More than a hundred women waited at the close of the vesper service to seek the new teacher, who is clergyman, healer and psychologist in one, and to ask his help." (Note the sex of the seekers.) What shall we say of such a demonstration, and of the means by which it is produced? Are they not calculated, like the pregnant words of the nostrum vender, to bring forth among the people the very ills they assume to remedy, in playing upon the pathophobic suggestibility of the masses?

Indeed, the author takes specific account of dangers of this sort. He details the case of "a sufferer known to us whose trouble is to be traced to the reading of a medical work, a practice which the non-medical person would do well to avoid. Nowhere is the adage so much to the point as here: 'A little knowledge is a dangerous thing,' " etc.

Against this place the opening paragraph in the next chapter:

"As we hope that this book will be of some service to nervous sufferers, we are loath to introduce into it any descriptions of disease. But, on the other hand, the chief object we have proposed to ourselves is an account of the work undertaken for the benefit of the sick in Emmanuel Church, and to give this without any discussion of the disorders we attempt to treat is impossible. *The sick are therefore advised to skip this chapter, AND THEY WOULD PROBABLY DO SO WITHOUT ADVICE.*" The italics and small capitals are ours. Other comment is superfluous, except to say that the chapter in question contains a "popular" journeyman account of the condensed morbidity of "neurasthenia," "hysteria," "psychasthenia," "melancholia," "hypochondria," "chorea" and "mania"—in short, pathogenic material enough for a thoroughly satisfactory infection of a nosophobic generation.

Whatever the results of the work of the founder of the Emmanuel movement and of his immediate disciples, there lies in it a further danger which, under certain circumstances, might become considerable. Worcester has called for coöperation in the churches throughout the land, and to that end he has traveled from city to city preaching the new gospel. As a result, numerous preachers all about are feeling themselves suddenly revived with apostolic power to cure bodily infirmities, and already some of them have out-Worcestered Worcester in overlooking the "alliance" with medicine which he assumes to be essential, and foresee the dawn of a new religious era in which the church shall be re clothed in all the authority and power she enjoyed before science took them from her. Thus, every preacher, whatever his intellectual qualifications, becomes potentially a "healer," and the resultant evils among credulous and ignorant communities might become matter for anxious contemplation.

It is refreshing to observe that not all clergymen are swept away by this private pentecostal wave. The Rev. Dr. Joseph H. Crooker writes in a recent issue of *The Christian Register* (Boston): "The experience of the centuries in differentiating religion and medicine is the wisdom of God. . . . For the clergy to ignore the verdict of the ages and attempt to revive an outgrown function will be harmful to both public health and to the Christian church, as it would be for surgeons to substitute magic for anesthetics, or for doctors to give physic when repentance of sin is needed. . . . To carry it (mental therapeutics) into the noisy

market place, and exploit its merits with the waving of banners and the blare of trumpets, will cause more invalids to suffer fresh torments and create more new patients with serious disorders, than many a doctor can cure. To get up a spectacular procession, to flourish gorgeous standards, and to shout aloud to the crowd, 'Come all ye that are sick and be mentally healed'—to follow this course is to invite seven devils to enter and take possession where only one previously existed!"

In conclusion, are we justified in denying that Worcesterism has in it any possibilities for good? By no means. There probably never was any method of treatment so bad that it could not boast some cures, either real or apparent; and it is a trite observation that any "New Discovery" in therapeutics appears in the eyes of many for a certain time following its exploitation as the long-sought panacea. Such has been the history of the Sympathetic Powder, Metallic Tractors, the exhibition of relics, and other fundamentally fraudulent procedures. Moreover, mankind seems to be "incurably religious," to borrow the phrase of Sabatier. A child-like fear of the unknown has not yet departed from the human breast, and any method of cure which bears the trademark of the church is bound for its season to win the confidence of numerous trusting souls.

It need not be gainsaid that *religious* psychotherapy has effected cures, but the cures it may have produced are such as could have and should have been brought about by means of *rational* psychotherapy in the hands of a conscientious physician. Whatever ills of humanity it is possible by any means to relieve, legitimate medicine is able to cope with. She requires no assistance or encouragement from the church; and in the use she makes of mental treatment, she is working in a direction absolutely counter to that of clerical healing. This is the final point of distinction, and it cannot be too much emphasized. What, after all, is the object of rational psychotherapy, indeed, of all honest therapeutics? Is it not to make the patient independent of the physician, to render him self-reliant, to evoke his latent powers of resistance and self-reinforcement, to unfold from within the sinews of strength, to make him in every part a man, conscious of his manhood, unafraid and able to stand alone?

To this human and humane attitude the clerical method is diametrically opposed. Priestly therapy would make man strong

only by emphasizing his weakness and dependence. It would keep him a religious, fearful, prayerful animal, finding his sources of strength not within, but in mysterious and hidden agencies without; and as often as he is down, it would force him to believe in his own helplessness, and to have recourse again and yet again to the outside mysterious agency, or its self-elected priestly representative.

The contrast is complete. It is the difference between bondage and freedom. Science would emancipate the soul of man. Declares the Church, "My quarry is the soul."

One of the greatest apostles of intellectual liberty once related this parable: "A surgeon once called upon a poor cripple and kindly offered to render him any assistance in his power. The surgeon began to discourse very learnedly upon the nature and origin of disease; of the curative properties of certain medicines; of the advantages of exercise, air and light, and of the various ways in which health and strength could be restored. These remarks were so full of good sense, and discovered so much profound thought and accurate knowledge, that the cripple, becoming thoroughly alarmed, cried out, 'Do not, I pray you, take away my crutches. They are my only support, and without them I should be miserable indeed!' 'I am not going,' said the surgeon, 'to take away your crutches. I am going to cure you, and then you will throw away the crutches yourself.'"

A STUDY OF HYSTERICAL INSANITY WITH AN  
ESPECIAL CONSIDERATION OF GANSER'S  
SYMPTOM-COMPLEX—REPORT OF  
EIGHT CASES<sup>1</sup>

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Hysteria is to-day generally regarded as a mental disease. Charcot has described it as a moral malady, and declares that hysterics are such because they are degenerates. As is well known, the French school describes delirium as one phase of an attack of major hysteria.

Many mental symptoms are described as hysterical manifestations such as mutism, lethargy, anorexia, somnambulism, screaming, laughing, sobbing and amnesia. Loss of emotional control and whimsical, vagarious or paradoxical conduct are common expressions of hysteria. Yet hysteria is not ordinarily considered as a form of insanity. But in a certain number of cases the mental symptoms are so exaggerated or profound or so prolonged as to constitute a veritable psychosis. The dividing line must be an arbitrary one, dependent largely upon the point of view and personal equation of the observer. This can be readily understood when we consider that the term insanity conveys no very definite idea and that various observers demand more or less in the number, character and duration of mental symptoms to constitute it. From a psychological point of view it will be generally conceded that the mechanism of hysteria and that of many of the insanities are often, if not always, identical.

Reasoning from the foregoing premises it would seem on *a priori* grounds that a certain number of cases of so-called insanity would be found to be cases of hysteria. But as a matter of fact

<sup>1</sup>Read at the thirty-fourth annual meeting of the American Neurological Association, May 20, 21 and 22, 1908.

the diagnosis of hysteria or hysterical insanity figures but rarely in the statistics of the hospitals for the insane. It would appear, as suggested by Janet, that when the mental symptoms of hysteria become profound or prolonged and completely dominate the clinical picture, that such cases are no longer designated as hysteria but as insanity. Very often the true character of these cases is not recognized because they are not seen by one observer during their entire clinical course. The asylum physician deals with insanity; and cases coming to him are classified by him under one of the well-known groups of insanity recognized by him. Again, there is a considerable group of observers who recognize hysterical symptoms in various psychoses commonly enough, and who look upon them as complicating features in these psychoses but who do not see in them sufficient evidence to label the psychosis as fundamentally or essentially hysterical in character.

Many difficulties and uncertainties surround the whole subject which is one of not only scientific but also of very practical interest, since the prognosis and treatment are both influenced by the proper recognition of hysterical insanity.

Renewed interest in the subject of hysterical insanity has been created in recent years, largely due to a paper published by Ganzer in 1895, in which he called attention to two mental manifestations—*Vorbeireden* and *Dämmerzustand*—which he believed were significant expressions indicative of hysterical insanity. Nearly all recent writers have discussed Ganzer's symptom-complex; and it therefore seems to us best to review at the outset some of this discussion.

What has come to be known as Ganzer's symptom-complex is characterized by *Vorbeireden* and *Dämmerzustand*. By *Vorbeireden* we understand replies to simple questions which, so to speak, miss the mark, answers which are apparently foolish, silly and inconsequential, and which may create the impression that they were made deliberately in a spirit of fun or were purposely incorrect as by one who is simulating an ignorance of the true replies. The answers bear a certain close relation to the questions and are not merely irrelevant; and the word *Vorbeireden* is probably best translated as "approximate." By *Dämmerzustand* we understand a state of consciousness characterized by mental clouding—a dream-like or veiled state of consciousness which is something different from apathy or stupor.



Vorbeireden as a characteristic of hysterical insanity was first described by Moeli of Berlin. Later Ganser investigated it, and it came to be known as Ganser's sign; while Vorbeireden, together with a Dämmerzustand, became known as Ganser's symptom-complex; and it is regarded by him as a stigma of hysteria.

Raecke, of Frankfort-on-the-Main, who has devoted much attention to the subject of hysterical insanity, states that of the cases admitted to the Frankfort Asylum during the last six years, four to six per cent. were cases of this character. From a study of 186 cases he came to the following conclusions:

The hysterical psychoses are distinguished by their origin and by hallucinations and delusions of a peculiar character; by fleeting ideas of grandeur; by marked variations in the emotional expressions characteristic of hysteria; by hallucinations of an ecstatic character and disturbances of consciousness peculiar to hysteria; by hallucinations and illusions with a strong emotional coloring. The simplest form of the mental expression is the hysterical Dämmerzustand. He recognizes a depressive and paranoic form. As important points he mentions the presence of hysterical stigmata, the extraordinary changes in the clinical picture, the ready influence of the symptoms by outer circumstances and the superficial character of the disturbances.

Emil Raiman ("Die hysterische Geistesstörung") describes hysterical delirium; and he has seen hysterical Dämmerzustand associated with maniacal, melancholic and stuporous mental states. He also recognizes an hysterical paranoia and a pseudo-dementia.

Raiman, in his splendid monograph based on a detailed study of fifty-five cases, considers the mental disturbances of hysterical attacks, hysterical delusions, hysterical Dämmerzustand, chronic hysterical insanity and hysterical psychoses of various expressions. Among 1,135 cases of insanity in women examined by him at the Vienna Psychiatric Clinic he found 126 cases of hysteria—11.1 per cent.; and among 1,723 men, 38 cases, 2.2 per cent. In other words, 5.7 per cent. of the 2,858 cases of psychoses of both sexes were diagnosed as cases of hysterical insanity. Recovery took place in 64.1 per cent. of Raiman's cases.

As illustrating the marked difference of opinion on the subject, it may be mentioned that Forester at the Heidelberg Clinic reported that 13.8 per cent. of the patients suffered from hysterical psychoses; while his successor discovered only 1.5 per cent.

of the cases as belonging to this group. It is a significant fact, however, that scarcely a writer who has investigated the subject denies in toto the existence of hysterical insanity.

Raecke in another paper divides hysterical insanity into two groups; simple hysterical psychoses and other psychoses presenting hysterical symptoms.

The simple hysterical psychoses show psychic paroxysms which are short in duration and not grave in character. He mentions as free from objections in his consideration hysterical furor and maniacal exaltation. In these psychoses clouding of consciousness, with hallucinations of a delirious character, waking dreams, somnambulism, stupor, lethargy, are observed. The stupor is often accompanied by a state of delirium and by expansive ideas. The patient may think himself an animal or child or an aged person.

Among the mixed forms of hysterical psychoses Raecke mentions especially a paranoic and a maniacal group.

Westphall discusses at length Ganser's observations on the hysterical *Dämmerzustand* and *Vorbeireden* and he reports in his valuable paper four clinical cases, in considerable detail. He regards the observations of Raecke and Ganser valuable as diagnostic criteria in the recognition of hysterical insanity. But he nevertheless believes that some of the cases they have reported as hysterical insanity are really cases of dementia *præcox*. Inconsequential answers, he holds, may be observed not only in hysterical insanity but also in dementia *præcox*, which he attempts to illustrate by the clinical cases which he reports. Two of his four cases he regards as examples of hysterical insanity and the other two as examples of dementia *præcox*. *Vorbeireden* and *Dämmerzustand* were marked features of all four cases. In all these cases there was a peculiar mental confusion and a dream-like state of consciousness. Two of the four cases the author regards as cases of dementia *præcox* chiefly because of the presence of negativism in one and a katatonic state in another.

The Ganser symptom-complex, according to Henneberg, occurs five times as frequently in cases of criminals as in non-criminals. He observes that dementia *præcox* is characterized by many symptoms of a hysterical character. He believes the Ganser symptom-complex is not of especial diagnostic value.

Raecke also observes that hysterical stupor is to be frequently

observed among prisoners; and he reports in his paper five such cases. These cases are generally ushered in by a convulsive seizure. The stupor is readily influenced by the operations in the patient's outer world. The reflexes are increased, and pain sense is absent or diminished. The condition may continue hours, days or months. There is complete amnesia for the attack.

The sensory disturbances do not, in the author's opinion, offer conclusive proof of hysteria, since they may be seen in katatonia and confusional insanity. More significant as diagnostic signs, Ræcke observes, are the hysterical character and the presence of convulsions or paralysis. Finally he admits that it may be a question whether a given case is one of hysteria or a combination of hysteria and katatonia.

Muratow also attempts to distinguish pure hysterical psychoses from those presenting hysterical complications.

Nissl argues against the acceptance of hysterical insanity as described by some writers. He states that the Heidelberg material reveals only 1.5 per cent. of hysterical psychoses—all women. But he admits that hysterical manifestations are rather frequent in the various psychoses.

Bihler reports two cases of hysterical insanity of interest because simulation was suspected, since both patients were charged with crimes. One patient was a servant girl who told stupid lies and made false accusations. The author considered her case one of moral degeneration on a hysterical basis. The second patient was a highly educated woman affected with religious fanaticism.

A case of acute hysterical insanity is described by Moravcsik. A nineteen-year old girl, whose mother and sister were hysterical, received, on May 6, a letter from her lover, breaking the engagement to marry her. She immediately felt sharp pains in the region of the heart; and clouding of consciousness soon followed, with restlessness, confused utterances, disorientation, insomnia and refusal of food. Fourteen days later she became quieter, and the next day she recovered consciousness and then rapidly recovered; but she had loss of memory for the events since the reception of the letter.

Examination showed the presence of stigmata of degeneration, tremor of the tongue and hands, exaggerated knee-jerks, concentric contractions of the visual fields, acoustic hyperesthesia and marked dermatography.

Hess reports twelve cases of hysterical insanity (one man and eleven women) among 1,729 insane patients. But he has not seen in any of them the hysterical *Dämmerzustand* described by Ganser and Raecke.

Vorster discusses Ganser's symptom-complex and reports five cases, four of which were in criminals. It was difficult for him to distinguish between katatonia and a hysterical condition. Ganser's symptom-complex was present in all these cases. The presence of hysterical stigmata and the fact that the symptoms were readily influenced by suggestion argued, in the opinion of the author, for hysteria. Vorster points out that *Vorbeireden* and *Dämmerzustand* are also seen in epileptics.

Delacroix and Solager report the case of a woman of fifty with various sensory disturbances and contracted visual fields and several other hysterical manifestations who was brought to the asylum because of hallucinations and persecutory ideas. She gave her age as seventeen and made all sorts of false answers as to herself and family. She thought her father dead and appeared to have the most cloudy ideas as to the past. The authors state that the paranoid group is characterized by the fact that patients are subject to suggestion. The delusions come and go and do not appear to be deeply rooted. The maniacal-stuporous form commonly develops on a basis of imbecility and is difficult to distinguish from adolescent insanity. From simple mania, hysterical mania is distinguished by child-like silliness. The emotional disturbances tend to show periodical fogging of consciousness and hallucinations of a delirious character.

Woodman calls attention to the fact that the text-books' consideration of hysterical insanity is very inadequate and that the diagnosis does not appear in the table published by New York State, notwithstanding the enormous number of admissions.

He reports a large number of cases which he has studied and which he divides into several groups as follows:

"First: A group of ten hysterical women all with definite stigmata, whose psychoses present certain features in common; emotional stress is very prominent as a cause; the patients, though sometimes violently insane, tend either in intervals or at all times to be natural in manner and point of view about ordinary things; the symptoms are of varying intensity; and the events of the more intense periods tend to be forgotten. On the other hand, the

symptoms vary from an active delirium to restless melancholia and to passing or more or less persistent delusional states.

"A second group presents one case of so-called involuntional melancholia of hysterical nature, and other cases of depression which do no more than raise the question of hysteria. These patients apparently have a melancholia of the anxious type often seen in the period of involution, but have had similar and milder attacks in early life and without any tendency to an alternating mania phase.

"Third: Cases resembling dementia præcox and the paranoid psychoses. In our case and in other members of her family the symptom groups are intimately combined.

"In the fourth group are two cases of confused hysterical delirium; in one case with physical stigmata, in the second with mental stigmata only. The first of these cases has developed at the last a systematized paranoid trend.

"Fifth, a case of impulsion and obsessive ideas in an hysteric.

"Sixth, a manic attack which during convalescence showed hysterical traits and which was perhaps hysterical also at the onset.

"Seventh, the hysterical dispositions; cases with only mental signs of hysteria and without such attacks as permit one to make a positive diagnosis. The cases are common and well known, and if not really hysterical are closely allied to the hysterical states."

Janet discusses hysterical delirium at some length. One of the cases reported by him showed the symptom of Ganser in typical form; and in this patient hysterical stigmata were absent. There was a dream-like state of consciousness with confused answers (*Vorbeireden*). Speaking of hysterical delirium, Janet remarks:

"Delirious hystericals have, on the contrary, particularly lively hallucinations of all the senses, and it is in the hysterical delirium and the toxic deliriums that visual hallucinations are the clearest."

He believes hysteria may result in intellectual enfeeblement and that it may be considered sometimes as the forerunner of dementia præcox.

Janet holds that even paranoia may be hysterical in character, and he reports an illustrative case. He also discusses the question which most authors who have considered this subject have also dealt with, namely, the relation of hysterical mental manifestations to other psychoses and also their relation with other phe-

nomena of hysteria. His views may be seen pretty well from the following paragraph:

"A disease is not an immutable entity, easily recognizable. It is a classification of symptoms grouped for the convenience of our mind. Hysteria is but a syndrome, an ensemble of facts grouped in a general idea, which facts are nearly all moral facts; they are somnambulisms, attacks, fixed ideas, disturbances of the attention, forgetfulness, insensibilities, which are psychological phenomena. There is no valid *a priori* reason to refuse to bring within this framework deliriums that are simply other mental phenomena. Besides, these authors themselves scarcely apply their doctrines in their extreme sense, for they accept the delirium of the attack, and even anorexia, which is, to a supreme degree, a delirium of long duration. We may then consider certain deliriums as hysterical."

Bauman reports the case of a patient who, following an accident, had been excited and suffered from many delusions and hallucinations. He scolded everybody and accused his wife; he tore up bedclothes, etc. He was disorientated for time and place. Vorbeireden was observed. This condition lasted ten days. The patient's condition very suddenly and markedly changed for the better. There was total amnesia for the excited period.

The case was at first thought to be one of parietic dementia, and that the accident was due to apoplexy. The Vorbeireden, although recognized as an unusual manifestation in such a condition, was admitted as a possibility. With the sudden improvement of the patient when changed to another institution, and especially on finding hysterical stigmata and amnesia, the diagnosis was changed to that of hysterical insanity.

Bauman's conclusion is that the symptom-complex in a case such as he has reported cannot be ascribed to the negativism of katatonia as held by Nissl.

Soukhanoff in an able paper remarks that since the publication of Ganser's article, a sufficient number of well-followed observations have been recorded to enable us to speak with assurance of Ganser's symptom-complex. He points out that it is due to Ganser that we see in Vorbeireden a symptom and not a species of simulation. Soukhanoff discusses the question as to whether Ganser's symptom-complex constitutes a distinct morbid entity; and he holds that the question is an open one. Since the

symptom appears frequently in persons arrested for crimes and those injured by railroads, it is evident to him that moral shock constitutes a great etiologic factor. Soukhanoff believes that Ganser's symptom-complex must be regarded as an important mental stigma of hysteria; but he admits that it may be seen in other psychoses, and especially in dementia præcox.

In looking for a psychological explanation, the author believes that the Ganser symptom-complex is due chiefly to faulty association of the sensory impressions. He sees an analogy with hysterical palsy and hysterical amnesia, which he would explain in a similar way. This is really much like Janet's explanation of hysteria in general, a failure of synthesis of sensory percepts.

Some weeks ago we had the pleasure of visiting the Sheppard Hospital, near Baltimore, and of examining some of the cases which are regarded by the members of the staff of this hospital as cases of hysterical insanity. The diagnosis is not overlooked in this institution. In writing to one of us a short time ago regarding Ganser's symptom-complex, Dr. Dutton observes that "While frequently confused with the irrelevancy of dementia præcox, it is somewhat different in character and appears to be more purposeful, in that the answers are more absurd and the patient of course shows less demented symptoms. This is in many cases a fine distinction, but I think it has been observed comparatively in a number of cases that we are frequently able to differentiate it."

Moreau de Tours looks upon so-called hysterical insanity as in reality a simple delirium; and he holds that even if hysterical symptoms are occasionally observed they are to be accounted as nothing more than complicating phenomena. Hysteria is often associated with various forms of mental alienation. He does not recognize hysterical insanity as a morbid entity. Attacks of delirium, depression, excitement and even periods of great excitement with distinct delusions and hallucinations are to be regarded as episodes in the life of hysterical individuals—equivalent to ordinary hysterical paroxysms. Hysteria may *simulate* or accompany and complicate various mental affections. Hysterical paranoia, melancholia and mania do not exist. They have no logical basis. He observes that the careful reading of the cases reported as forms of hysterical insanity shows that the course, character, duration of the various symptoms are not those

of the typical psychoses, but that they are of the sort of translation of ordinary hysterical paranoia, and that they may be the result of auto-suggestion. He reports a case of hysteria associated with epilepsy exhibiting mental phenomena of excitability, paradoxical conduct, delusions and hallucinations of short duration and frequent in number, and all developed by auto-suggestion as by reading a love story, etc.

Ruggles has also inquired into the question of Ganser's symptom-complex; and for this purpose he has examined 170 cases of insanity of all kinds. Of these 170 patients, 110 answered questions correctly; 40 answered more than one half the questions correctly; and 17 answered them incorrectly. For various reasons in three cases *Vorbeireden* was noted; and all these cases are cases of dementia præcox. Upon second and more pressing examination, by asking the same questions, these signs were absent. When the patient was asked why he answered so foolishly in the first examination he said that he gave foolish answers because the questions were foolish. Ruggles believes that the first answers were made deliberately. He thinks it is fair to say that in many cases undue importance is attached to the sign of *Vorbeireden* as a manifestation of hysterical insanity. He believes that it is not necessarily a significant symptom, but often a matter of suggestion, perversity, obstinacy or carelessness. He believes that at least for dementia præcox this holds good. Although he admits that for hysterics the symptom may have another meaning, he holds this to be improbable when we consider the perversity of these patients.

We have observed Ganser's symptom-complex in only a few of the cases of insanity and in these usually in an incomplete form. But in at least one of our cases, which we regard as one of hysterical insanity, it formed a striking feature of the clinical picture. *Dämmerzustand* alone has been noted by us much more frequently.

Reviewing the foregoing studies and our own limited observations it would seem that *Vorbeireden* appears in a variety of different psychoses and that it is by no means characteristic of hysterical insanity. *Vorbeireden* in association with *Dämmerzustand* is far more significant of a hysterical psychosis. Yet it is by no means to be regarded as invariably an hysterical expression; for it too is to be seen as an expression of other mental



states. But its presence is to be regarded as suggestive of an hysterical insanity. We look upon it as a mental expression which probably is of considerable value in the recognition of hysterical psychoses. But like other expressions or stigmata of hysteria it can only be of value when considered in connection with other signs or symptoms pointing to hysteria. Probably in the majority of cases of hysterical insanity Ganser's sign is absent in its typical form.

The consideration of Ganser's symptom-complex has led us to study certain delusions which we have observed in the hysterical psychoses which appear to us to be in keeping with the symptom of *Vorbeireden* and which might be designated as foolish, absurd or inconsequential delusions. Most of them relate to the patient's own body and are of the variety known as somato-psychic; and these are probably dependent upon faulty sense perception and faulty synthesis of sensory percepts and really constitute a form of dissociated personality. One patient, for example, complained greatly that she did not have her own hands and feet, that she had no hands or feet and talked of and lamented the circumstance a great deal. Another patient seen by us at the Sheppard Hospital spoke of having three heads and would discuss the matter very glibly and in a most absurd fashion. Another patient complained that she did not possess her own legs, but had her brother's, to which she greatly objected. Another complained that there were snakes in her head, that her body contained much glass. She declared the doctor was a baboon and often saw in her sleep Adam and Eve in the Garden of Eden. Another patient complained that hair was put in her coffee and milk.

These delusions appear as silly, foolish, theatrical, almost as though assumed for effect and appear as comparable to the foolish, silly answers which constitute the *Vorbeireden* of Ganser and are suggestive of the same sort of a psychosis. We look upon them as of considerable significance as indicative of an hysterical psychosis. But like other symptoms they are not sufficient in themselves to warrant this diagnosis; but are of great diagnostic value when taken in connection with other evidence pointing to hysteria.

The diagnosis of hysterical insanity can be made with the greatest certainty when in addition to the mental expressions of

the psychosis one can find certain of the well-known expressions of the great neurosis, such as contracted visual fields, disturbances of sensation, convulsions, aphonia, paralysis, astasia, abasia, contractures, suppression of urine, etc.

Unfortunately in many cases the visual fields and the state of sensation cannot be properly tested by reason of the insanity. But yet it often happens that at some time in the course of the psychosis or upon its subsidence these tests can be made; for we have the records of a considerable number of them.

In considering the evidence offered by a test of sensation we must be cautious in attaching too much significance to the presence of universal analgesia. For this may be found in a variety of psychoses, as, for example, melancholic states, and in dementias of various sorts. But hemianalgesia and segmental analgesia are distinctly significant.

In many cases of hysteria—probably in the majority—sensory disturbances are absent; and this is true of the hysterical psychoses as well as of other forms of hysteria.

In considering then the diagnosis of the hysterical psychoses all evidence pointing to hysteria should be carefully examined and weighed. We shall here, however, confine our discussion to the psychic expressions of the disease.

It would appear then from the evidence at hand that on the mental side hysteria may simulate almost every known physical disease. On the mental side as on the physical the counterfeit is often apparent. But in many cases the question of diagnosis will prove most difficult and in some insurmountable. In some instances the diagnosis can be made with reasonable certainty; while in many more as only probable, and in still others it must remain doubtful.

Probably the most common mental expression after the exaggerated hysterical character is that of delirium. But maniacal, melancholic and perhaps even paranoid symptoms are to be seen. Peevishness, querulousness, fault-finding, exaggerations, dramatic conduct indicative of the hysterical character are common enough. The Ganser symptom-complex and the foolish delusions already referred to may be encountered. As in the case of other symptoms, the mental phenomena may be paradoxical in character, exaggerated and theatrical in expression. Then too great suddenness in the change of the symptoms may be observed

and the fact that they are influenced by suggestion. Oftentimes the psychosis exhibits several contradictory expressions and the impression is created in the mind of the observer that it is different from and fails to tally with those of the insanities he has adopted for his own classification. The disease may express itself chiefly by the hysterical character. Finally the course and the mode of the termination of the psychosis is of diagnostic significance. We may here remark that the four cases of hysterical delirium previously reported by one of us (Dr. Diller) all terminated in recovery; and none has relapsed or exhibited residual dementia, a point which emphasizes the correctness of the diagnosis, since three years have now elapsed since that report was made.

Probably the greatest difficulties arise in differentiating hysterical psychoses from delirious and maniacal states and from dementia præcox. We shall say a word regarding dementia præcox only. Its negativism, mannerisms, mutism, impulsive conduct and katatonic stupor are each in turn suggestive of hysteria. We have encountered several cases in which we were unable to make differential diagnosis between dementia præcox and hysterical insanity. We can here only offer the suggestion that in some instances the diagnosis can be cleared up by prolonged observation. Negativism is not conclusive evidence of dementia præcox; for hysterical mutism is a marked species of negativism.

The question of the differential diagnosis is one of practical importance and especially in those cases in which it is a question as to whether the patient suffers from dementia præcox or hysterical insanity. The question is not one of mere academic interest, for if a given case can be recognized as one of hysterical psychosis, the prognosis is far better than if it be one of dementia præcox.

Hysteria of any sort may, however, prove to be chronic or may show frequent relapses; and the hysterical psychoses conform to this rule. Two of the cases we have to report were examples of recurrent hysterical psychosis, each of which ran a course covering many years.

With this brief discussion we shall now offer for consideration several clinical records to illustrate some of the various points which have been discussed. We feel the inadequacy of this

discussion, but we are impressed with the importance of the subject of hysterical insanity, and we feel that it deserves and should receive far greater attention and investigation on the part of neurologists than it has hitherto received, for the subject is one full of interest whether viewed from the scientific or practical point of view. The material is abundantly at hand and only awaits investigation.

#### ACUTE CASES

CASE I. Mrs. X., married, age 26, of Pittsburg, first came under the care of Dr. Wright, in June, 1906. In the family history we find one uncle epileptic, and a brother alcoholic; and the previous personal history is without especial note except for the appearance of a simple goiter at the age of fifteen. The patient has always been willful and stubborn and has been much humored by her family. At the age of nineteen, much against the wishes of the entire family, she married a man of a different religion. This marriage turned out unhappy. The husband was a periodical drinker and sometimes would go away for a week at a time and nothing be heard of him.

The present sickness began in June, 1906, after three months of vague neurasthenic symptoms much augmented by family troubles and the fact that the patient found herself pregnant. At the second month of gestation she induced an abortion, at which time Dr. Wright was called. The ordinary treatment was followed and she promptly recovered. The patient, however, was much depressed by her deed and suffered acute remorse. She became restless, sleepless and talked much of her sin. She saw thousands of babies pointing their fingers at her. Later she saw fiery devils. She was very emotional and cried a great deal. She became very childish and unreasonable. She cried for a \$1,000 check, then for a silver purse, then for a special variety of toilet water. When her requests were not granted she would have noisy, violent spells, by which she was completely exhausted.

About the first of July the patient was removed to the Allegheny General Hospital. Here the silly emotional paradoxical conduct continued. One day she worked herself up in a very violent spell because she could not have her nails manicured by a particular manicurist. She became more and more childish in her actions—imitating a child in speech. She spoke of her brother-in-law as "uncle-doctor." She begged to have her hair cut short, and even attempted to pull it out. Sitting in bed with a bottle of toilet water under one arm, a silver picture frame under the other, and a silver purse dangling from one wrist, she presented a comical picture. Attempts to take away these articles resulted in producing a condition of semi-delirium. The

patient slept little. She refused to eat and had to be restrained in bed. Examination at this time revealed almost complete hemi-analgesia on the right side. The knee-jerks were somewhat exaggerated.

The patient grew rapidly worse and finally sank into a state of active hallucinatory delirium. The tongue became dry and coated; the pulse rapid and somewhat weak. Dr. Diller was called in and pronounced the case one of hysterical delirium.

After being in the hospital about a week the patient began suddenly to improve. She slept better, ate better and became more and more tractable. She took an interest in her surroundings and was soon able to walk about. In about three weeks after admission she seemed well enough to leave and she was sent to the country, where her sister had a large place, to recuperate. On leaving the hospital she was quite weak; she had lost much flesh. Mentally, except for capriciousness and selfishness, she seemed almost herself again. There was amnesia for most of the events which had occurred in the hospital.

In the country the patient did quite well for a time; she gained in strength and weight and was able to take long drives. There was some difficulty in securing sleep, and backache was complained of most bitterly. About the first of September, when the patient seemed about ready to come home, some family trouble occurred, and an effort was made to separate the patient from her husband. Of course she was much excited by all this. She came home and a very painful scene occurred. Almost at once there was a recurrence of the old trouble. The patient became utterly unmanageable and frequent threats of suicide were made. At this time it was noticed that the patient was lame, absurdly so. She walked as if one leg were at least four inches shorter than the other, and she used a cane. On examination there could be found no cause of this or for the backache so bitterly complained of.

About the first of September the patient was placed in the care of Dr. Diller at the St. Francis Hospital. Here, for the first ten days, she became much worse. She was excited and had hallucinations. She saw devils, babies, etc., she was sleepless, ate nothing, and when tubed tore the tube to pieces. She took an intense dislike to Dr. Diller and used the most insulting personal abuse. Finally she became delirious and her tongue coated and dry. Her pulse was weak. Urine and feces were passed involuntarily. It seemed as if she would die. Three days later, however, she began to improve in every way, and continued to do so rapidly. She became quiet, slept fairly well and began to eat. She treated Dr. Diller respectfully; in fact she seemed to have almost a fear of him. In about ten days after admission she was almost her own self and wanted to go home. At the end of three weeks she was almost well. The lameness

had entirely disappeared. There was almost entire amnesia for the events of the first week, but good memory for those of the latter two weeks.

The patient was now sent to a sanatorium in New Jersey to recuperate, and after three weeks returned entirely well. Since then she has gained steadily in weight. She has been able in the past year to experience the death of her father, her brother, and one of her own children within a period of six months, without any unusual emotional reaction. In August of last year she gave birth to a ten-pound baby. At the present time is sound and healthy in every respect.

*Comments.*—This case appears to us as a clear one of hysteria. Besides the very evident hysterical conduct and delirium, the hemianalgesia and lameness strongly argue for hysteria. A point of considerable interest in this case is the great disturbance of metabolism, as evidenced by dry tongue and which was noted at one stage of the attack; and the fact that at this time the exhaustion and toxemia were so pronounced as to threaten apparently the life of the patient.

CASE II. (Dr. Diller.) The next case is one which presents some indications of melancholia; and the account which I received from the friends before I had seen the patient led me to expect that I would see a patient with melancholic depression.

I was told that for six months past the patient had been mentally unbalanced; that she was depressed and that she thought her soul lost and had often threatened to kill herself, and had made two or three attempts to do so, once with a towel, another time with a knife. She believed that her family were conspiring to get her out of the house in order to break up housekeeping; thus she would be thrown out of a home.

The patient was a single woman, thirty years of age. She had been ailing more or less for a couple of years. She has organic valvular disease of the heart. She had acted as housekeeper for her brothers and sisters in a small country village and had seldom been from home. It is said there is no insanity in the family.

With this account, I visited the patient at St. Francis Hospital, where she was brought February 26, 1908. I found her sobbing a great deal and calling out to the sister that she wanted a private room and did not want to be in a ward with other patients. The sobbing and protestations were of an exaggerated character. It at once struck me as very odd that a melancholic patient should be so particular as to her surroundings. I said to her in a sharp tone that she was carrying on in a foolish way and that she should quiet herself and behave sensibly. She quieted down in a few moments. Then looking at her, smiling, I said, "Now cheer up! Smile a little! See Rosy smiling at you!" (the old nurse). Almost at once a smile lighted up her

face and this was quickly followed by an extremely loud outburst of diabolic laughter, which kept up for about a minute, during which time the patient's face was very red and congested. Tears had now entirely disappeared.

I saw the patient half an hour later. She was now in bed, quiet and composed. She asked me why she was brought here. She knew quite well that she was in a hospital, and that the patients about her were insane. She protested that she did not need to be here. After a short conversation, she was seized with another laughing fit, not so loud as the first one. She sprang from the bed with arms extended towards me, offering to embrace and kiss me.

I subsequently learned from her sister and her physician that she had been in bed three months past and that many of her friends came to see her. Often at these visits she would break into loud laughter and stretch out her arms to embrace and kiss these friends, whether of the male or female sex, just as she had done to me.

A physical examination revealed a mitral-regurgitant murmur. The general appearance of the patient, however, was good. She was well nourished. On test with pinprick she appeared to have universal hyperesthesia.

The day after admission, the patient had a loud screaming spell which lasted continuously for three hours, and which was terminated by immersion in a cold bath. After this no screaming attack occurred. The patient cried from time to time. Her conduct in the main was peevish, irritable, fretful; but she did not reveal any definite delusions or hallucinations. She soon began to ask to go home in a fretful, peevish way, much after the manner of a spoilt child.

She left the hospital about six weeks after admission much improved.

*Comments.*—The sudden emotional displays of this patient, with her dramatic, whimsical, peevish, paradoxical conduct are so indicative of the hysterical character, and the marked influence of suggestion seem to us to clearly indicate the hysterical nature of this case. On the negative side it presents no resemblance to any other of the well-known insanities.

CASE III. (Dr. Diller.) The next case is that of an unmarried woman, 34 years of age. Her family and previous history are both negative. The patient was brought to St. Francis Hospital, January 10, 1908. She had been mentally unbalanced for about three months previously. From the account given by her brother and physician, I learned she had been working steadily for many years as housekeeper for her brothers and sisters. She had been very faithful to her duties and had scarcely ever been away from home.

Previous to coming to the hospital she was noisy, mischiev-

ous, whimsical, devilish, fretful, all by turns. She had been ill about two months. She had been in a general hospital in the neighborhood. Here by clever dodges she had escaped the surveillance of her nurses and gone home several times. On several occasions she had screaming attacks and on one occasion she danced on the top of the piano. For several weeks before coming to the hospital she had conceived the idea that her hands and feet were missing; at other times she would say that she could not feel her hands or feet; again that if she had hands and feet they were not her own, but belonged to some one else. On admission to the hospital she was lamenting a good deal about her hands, and her brother assured me that this was the only evidence of insanity. She appeared depressed and worried and fretted a great deal about her hands, to which she made constant reference.

The patient seemed well nourished. Physical examination revealed nothing especially significant. Skin sensations appear normal; knee jerks exaggerated. When the hands are pricked with a pin she quickly withdraws them, saying this is painful.

During the next three weeks the patient fretted and fussed a good deal about her hands and her general condition and the "awful state" in which she was in. Her complaints were of a peevish, fretful character. Her memory appeared good and her face and general conduct indicated intelligence. She was well orientated, for both time and place.

January 28 (fourteen days after admission), after a "queer feeling," she fell to the floor in what the sister thought a sort of faint. I found her in bed on the afternoon of that day. She was now complaining bitterly. She said she would never get out of bed and that she would never do any good. But she did soon get out of bed and began to improve, and the improvement was rapid. She often asked to go home. She was always told that when she would behave quietly and sensibly, and stop the foolish talk of her hands, etc., she would be allowed to go home. A strong effort was made to impress her with the fact that she could control herself if she would only set out to do so and that the ideas of her hands are foolish vagaries which she had allowed herself to entertain.

I am quite confident that the suggestion operated strongly in restoring the patient to health. She left the hospital after a stay of about two months, apparently restored to health.

*Comments.*—Here again we have a psychosis which does not conform to that of any of the well-known psychoses. The diagnosis of hysteria rests chiefly upon the hysterical character of the patient, her changeable, fretful, whimsical, paradoxical conduct and her apparently foolish, silly somato-psychic delusions regarding her hands. It is this sort of delusion which appears to us as very like the foolish, silly answers to which Ganser has directed attention.



CASE IV. A single woman, aged 34, was admitted to the St. Francis Hospital, October 11, 1907. She is the mother of a child six years old. Her mother was an inmate of an insane asylum.

She had been insane for several weeks before admission. She thought she was robbed in the house at night where she heard noises. She thinks people are talking about her. The walls and ceiling get black. She sees objects on the floor. She believes she is being "doped" and that people are giving her chloroform. She has periods of depression.

On admission she was very stuporous for about a week and then she became noisy. She was extremely agitated and noisy for a period of four or five weeks. During this period her tongue became dry. She had to be fed by the stomach tube for a period of two months.

December 7. To-day she is quiet and placid. She eats when fed with spoon. She sometimes soils herself.

December 21. The patient feeds herself without assistance. She is quiet most of the time, but appears to have dream-like consciousness. She says nothing and replies to questions only occasionally. She keeps her eyes persistently closed and resists efforts to open them. Occasionally she becomes loud and noisy, or sings, or has spells of loquaciousness. Her replies to questions are much more sensible sometimes than at others. At times the answers are so beside the mark as to suggest *Vorbeireden* of Ganser. She may repeat a few words of the end of a phrase. To-day for the first time she lies in an uncomfortable position, her head resting on an iron bar at the top of the bed. She makes pantomime motions. The tongue is now comparatively clean and the patient reacts promptly to pin pricks. Her physical condition is fair.

December 28. The patient is improving. She is quieter and more tractable. She attends to the calls of nature.

January 6, 1908. She has been up out of bed and dressed during the last week. She is steadily improving.

February 8. She talks better; but much that she says is disconnected. She speaks in an indefinite way of someone being killed.

February 15. The confusion and loquaciousness previously noted have cleared up. She looks quite well and talks connectedly. She has just written a sensible letter to one of her relatives. Her memory for events of her illness seems very cloudy.

February 22. Pain sense is greatly diminished, especially over arms and legs. The patient now talks quite rationally, and she has been rendering very efficient work in the wards. She asks in a sensible way to go home.

A couple of weeks later the patient was discharged apparently restored to health.

*Comments.*—This is one of the cases in which we have made a diagnosis of hysterical insanity with some reserve. There are

several features which point to this diagnosis, namely, the sudden change in the mental state; the great variety of mental expressions and silly delusions and answers to questions; the state of cloudy consciousness; the amnesia; the analgesia; the development and the course of the case. On the negative side, the case does not fit in very well under any of the heads named in the classification of Kraepelin.

CASE V. An Irish woman, aged 30; married. She was admitted to the St. Francis Hospital January 30, 1908. Her family history was negative. She herself had always been strong and healthy. She had been in this country only a short time.

The beginning of her present illness dates back to four weeks ago, when her husband died. For three days following his death she seemed bewildered and dumbfounded. For a period of two days she refused to eat. She believed that hair was in the food. Afterward she became noisy and continued so night and day for several days.

On admission the patient was very loquacious, agitated and untidy. She made many nonsensical statements and often repeated herself. For example, she talked of people putting hair in her medicine and pins in her bed. She makes false statements as to events in the past and gives absurd answers to questions (*Vorbeireden*). Although she talks much her voice is not loud but monotonous and tiresome in tone.

Physical examination revealed nothing especially significant. The patient's general appearance and cranial formation indicate rather low development. She appears to have universal analgesia.

January 31. The patient now appears to be in state of mental depression. She is apathetic and says nothing except in reply to questions. She falls into tears while speaking. She appears to be correctly orientated.

February 11. For several days recently she lay in a stuporous state. To-day she speaks readily.

February 15. Since the last note she had two stuporous attacks each about two hours in duration, when she appeared wholly unconscious of all her surroundings. She awakened out of both these attacks quickly and at once appeared as bright as before.

A significant feature of her case is the fact that during the visit of her brother, one week after admission, she brightened up greatly and talked to him sensibly. After his departure she at once relapsed.

She has been a good deal brighter the last couple of days. To-day she was visited by her late husband's brother from her old home in Ireland; and she and he had a sensible talk over the matter of her return to the old country. Her brother-in-law thought her mental condition about normal. She asked to be allowed to leave for Ireland with her brother-in-law. She accordingly left for Ireland the next day. A letter has since been received from the

brother-in-law stating that he had no difficulty with her whatever crossing the ocean and at home, among her old friends, she seems to be quite herself and in a normal mental condition.

*Comments.*—The significant features of this case are the onset after a great psychic shock; great variability in mental phenomena, stupor and apathy, alternating with delirium and loquaciousness (*Vorbeireden*), absurd delusions (hair in food) and the marked influence of suggestion upon the patient. There was a most marvelous contrast between this patient's general appearance as she walked out of the hospital on the sixteenth of February and that of only a few days previous in which she lay in apparently katonitic stupor which one might have supposed would have meant weeks or months of hospital confinement ahead of her.

CASE VI. (Dr. Diller.) Man, aged 51 years, salesman, jeweler, 28 years married, father of two grown daughters. He smokes a good deal. His wife says he does not drink, but in his delirium the patient spoke of drinking freely and having been under the influence of liquor. I later learned that he drank a good deal. He is a man respected in the community and considered a reliable man and one of good habits.

Early in November, 1907, he contracted lues. A typical primary sore was followed by typical eruption and very sore throat. All these manifestations were observed by a very competent physician, who waited until the appearance of the eruption before instituting specific treatment. By Christmas the eruption had all disappeared. At the time the patient contracted lues he was greatly worried over depression in business. Three weeks after he had contracted the primary sore he confessed his wrong doing to his wife, and he suffered from the keenest remorse in so doing. He had suffered the greatest agony during the previous three weeks.

I saw the patient on March 10, 1908. One week ago he began to act in a silly, foolish manner. He would read the paper and start to laugh. He could not read for laughing, and this laughter was all without adequate cause. On one occasion, ten days ago, he was intoxicated. Since that time he has been at home and often, as his wife expressed it, was crazy or violent in spells of short duration. During these spells he gesticulates wildly and uses profane, obscene language. These "crazy spells" are characterized by violent, purposeless movements. The patient kicks and strikes in all directions, staggers and resists and drops to the floor if not supported. At the same time he gives utterance to loud, explosive expressions, often extremely obscene and profane. He has three or four such attacks in a day. To-day he has had two attacks.

The duration of these attacks is from five minutes to half an hour. He was out of doors to-day for a little walk with male nurse who has been in charge of him during the last four days.

*Examination.*—I found the patient in bed. He shook hands with me and called me "Doctor," and entered into conversation with me freely. He appears to me a good deal confused and acted in a rather mystical way. His attention would wander; his consciousness appeared clouded; he was in a dream-like state. He told me correctly the name of the street on which he resides and said the date was March 8 and the day Thursday (March 10 and Tuesday were correct). I asked him where he went in his walk to-day. He hesitated greatly and appeared to fence for reply. "I cannot say just where; I am not clear which way it was. Now you must give me time to think. Let me consider. Where did I go? I must think; I am not quite sure where we did go (after considerable pause) I can't tell you." I asked him the name of the street on which the cars travel at the corner below his house and the name of the President and Governor, and his replies were correct to these questions. He remarked, "I have had some insane fits," (long pause) "yes, insanity." The eyes wandered about the room and back to me and he appeared to become more and more confused and befogged as the examination proceeded.

I now made a brief physical examination. Examination of the chest was negative, knee-jerks were somewhat exaggerated, pain and contact senses were diminished. I next proceeded to get the patient on his feet to examine his pupils, when he gave a sudden, electric-like jerk and immediately began to call aloud in a startled frightened voice. These movements and utterances came with great suddenness and followed each other, interrupted by brief pauses, during which the patient was very quiet and limp, and would have sunk to the floor had he not been supported by the nurse and me. Gradually the movements and utterances increased in intensity and the intervals decreased, so that in a few minutes the patient was talking in a very loud, confused manner, and giving utterance to the foulest and most obscene expressions. Thinking to arouse him or to affect him by suggestion, with the nurse's assistance, I led him half way across the room and bade him stand alone. He threw himself down in a heap, struggling and kicking in most violent manner. We were compelled to hold his hands for fear of being struck ourselves. Now the utterances and movements became intermittent again. After this attack had continued thus for ten minutes, its violence began to abate a little, and by the end of half an hour the patient had resumed his usual mental condition—that in which I found him at the beginning of my visit. The extremely violent part of the attack had lasted not more than ten minutes. I now attempted to renew my examination. Pain sensation appeared everywhere diminished, but the test was not satisfactory. I asked the patient about twenty questions in arithmetic. In all but two or three instances his answers were wrong and absurdly wrong. They appear to illustrate the Vor-

beireden of Ganser. At the time I wrote down several of the specimens of the patient's answers which I am here reproducing:

$$\begin{array}{r} 3 \times 3 = 7 \\ 7 - 3 = 2 \\ 5 \times 3 = 15 \\ 11 - 4 = 2 \\ 5 - 3 = 4 \\ 7 - 4 = 9 \\ 2 + 2 = 5 \end{array}$$

These replies were given with fair degree of promptitude. Several times I corrected him; and when I did so he never insisted that he was right but looked at me in a blank, confused fashion.

A few days later the patient was sent to a sanatorium where I saw him again on April 2, about three weeks after my first visit. He recognized me and, although he appeared dazed and confused, said that I was the doctor who had called at his house. He seemed disinclined to talk. His replies were brief and he expressed no desires of any sort.

I have only recently (April 28) learned that the patient has been returned to his home and is in a quiet, docile mental state and appears nearly well.

*Comments.*—It would appear that in this case that the cause of the insanity was a combined psychic insult—worry over financial matters and the fact that he had contracted syphilis and that his wife had knowledge of the fact. The symptoms appeared too soon after the chancre to be attributed to syphilitic lesions of an organic character. The vigorous specific treatment would also argue against this view.

The mental symptoms, the presence of Vorbeireden and Dämmerzustand and the extremely dramatic character of the outbreaks of excitement argue for the hysterical character of the psychosis. As additional arguments may be mentioned the short course of the psychosis and the fact that it presents but little resemblance to that of any of the well-known types of insanity.

[*Note.*—An examination of this patient several weeks later, and after this paper was read, makes the diagnosis seem doubtful. The patient is now in a hospital for the insane. His mental condition is one of deep apathy or stupor. He is inattentive to the calls of nature. His pupils are small and react to light very slightly. The patient makes no utterances of any kind. He has a tendency to get into awkward attitudes. When his arms are placed in a certain position they somewhat tend to remain so in a way that is suggestive of catatonic state. But yet this sign is by no means typical in its character. The patient's present state, therefore, strongly suggests organic disease, cerebral syphilis or parietic dementia.

Yet the development and manifestations of this case are much

different from those one sees ordinarily in brain syphilis or paresis. Subsequently the patient's mental state cleared up; and he is now at home going about; and his wife thinks him as well as usual.]

#### CHRONIC CASES

CASE VII. (Dr. Diller.) A woman, aged 54, was seen by me for the first time on July 11, 1907.

She was married in 1875, and her first child was born in 1876. This child was drowned at the age of twenty. Another child was born in 1892, and following the birth of this child she became insane, and was in Dixmont Asylum from November, 1892, to April, 1893, when she went home. For a whole year following removal to her home she was mute, never uttering a single word. She has had about a dozen attacks of more or less similar character, since that time, but always of very short duration, some of them lasting only a few days. Besides these attacks she occasionally has had short periods of excitement, during which she has talked a good deal to herself. During the apathetic or cataleptic attacks the patient was mute, apathetic, and her limbs would remain in the position in which they were placed.

The patient had had her own way to a remarkable degree since she was a child. She had been humored by various members of the family in every possible way, and especially so since she came from the asylum, sixteen years ago. The sister informs me that no member of the family would think of contradicting the patient in any opinion she ever expressed. It was long ago found that contradiction was apt to precipitate a tantrum of some sort.

Although her husband is well thought of by the family and respected by everybody, the patient had taken a decided antipathy to him, so that he is not able to live in the same house with her. The husband is on the best of terms with the various members of the family and is consulted by them and comes to the house to see his wife occasionally. Another very curious feature of the patient's make-up is the fact that she took no interest whatever in her child born in 1892, during his infancy and childhood. But now that he has grown up a fine, large, manly boy, she feels *proud* of him. Her sister tells me she thinks the patient has no proper sort of *affection* for her boy even now.

Between the various attacks from which the patient has suffered she appears rational or nearly so. The possessor of considerable property, she gives directions as to the investment and re-investment, and her business judgment is said to be excellent.

Ever since the first attack she has been kept very quiet, living very secluded in a fine old family home here in the city, surrounded with ample grounds, garden, etc. The family feel that the patient is unable to bear any unusual excitement without becoming upset. Although her business judgment was good and

the patient, generally speaking, rational, her sister has felt that she is "never just quite right," without being able to state any more explicitly what she meant. The patient herself appears to realize that she could not stand much excitement and when company came she would voluntarily withdraw to her own room.

Ten or twelve days before my visit the patient developed one of her typical cataleptic attacks and it was thought that she would come out of it in a day or two, but to the distress of the family the attack has continued with varying mental phases up to the present time. The patient talks, scolds and is sometimes hilarious. Last night for the first time she was quite loud. The conversation to-day appears disconnected and confused, but behind it there appears considerable alertness, too. She has taken a strong antipathy to her family as she always does in her attacks. She has been sleeping very little the last two weeks.

The next day the patient was sitting up talking a great deal in low voice, in a disconnected fashion, smiling occasionally. I suggested that we play "Quaker" for five minutes, and I took out my watch to time the period of silence, holding up my finger, warning her that she must be absolutely quiet for five minutes. She did keep perfectly quiet during the next five minutes and seemed to understand something of the humor of the situation.

During the next two weeks the patient talked much in a low, muttering voice. The various sentences are usually clear in themselves, but there is no connection between them. The patient often puts her hands to her neck and mouth, giving them curious twists, making twirling worm-like movements with her fingers. By my direction she has been kept in bed most of the time. The nurses have, as a rule, controlled her very well; but she occasionally insists on getting up and for two or three days made efforts to expose herself. For a couple of weeks the talk was kept up almost continually; but on July 22, by my direction, the nurse read to her from *Vanity Fair* for about an hour, ordering her to keep quiet while she was reading.

The patient is very fond of this book, and she stopped talking and listened. She is a good French scholar and often corrected the nurse's pronunciation of the French phrases which occur in this book, and occasionally corrected her English also. Immediately upon the cessation of the reading the patient lapsed into low, muttering talk as before. It became more and more possible to attract her attention by reading and finally her attention could be attracted in this way at any time. She gradually improved and by the middle of August (six weeks after onset of the attack) she had reached her usual mental state.

She remained in this state until the latter part of February, 1908. I was called to see her March 2, 1908, and was informed that she had shown mental symptoms for ten days past. Five days ago she was very loquacious, talked all day. Next day she

was mute and cataleptic all day, assuming certain attitudes. With the beginning of the attack she had sung a good deal.

When I called I found her sitting in her bedroom, clothed in a wrapper. She greeted me with a smile and shook hands. She talked in a smiling glib manner, of which the following is a fair sample:

"Must take medicine forever—I have had enough medicine. I do not need a doctor. Just write down what you see." All this was said in a quiet voice with occasionally a quiet laugh.

The next day when I called I found the patient sitting just inside the hall door, clothed in bedroom wrapper and with the trained nurse standing beside her. I was informed that she had been there for two hours "waiting for her carriage." She talked in the same glib fashion as she did yesterday, occasionally smiling or laughing. Her eyes were half closed much of the time. She spoke much of "cutting heads off" and of "the duty of doctors." She asked to go West. She said she wanted to drive to Denver. I insisted that she go into the reception room. She resisted forcibly. I put my arm around her and forcibly carried her into the drawing room, the patient struggling and resisting during the process. But when I once got her in the drawing room all struggling ceased, and she did not attempt to go back to her former position. Seated in the drawing room she continued to talk and I put down in the note-book a number of her expressions.

"Behead them. That big Irish thing. Take a train for Denver. Strike the rebels. Exterminate them. That's right. He said it was good water. Mother will cut their heads off. Yes I like those songs. Oh! promise me. I gave up meat because I must keep myself composed. (She has refused to eat any red meat in the last four years.) Rather any roast than his own. Perfect wretch. He wants to drink butter milk. Heads off. Nasty old nerves. Drive away to Denver. The man who took charge is a union man. Death is their portion. That old china must be preserved too. The piano is dusty—dusty in every respect. Any man loitering about must be beheaded."

After a little while, with the assistance of the nurse, I carried the patient to her bedroom. She resisted and made herself stiff. Arrived in the bedroom, I put her in a rocking chair, where she rocked and smiled, but made no attempt to leave. She smiled and chatted away without showing the slightest resentment or anger.

The patient was much improved next day, and a few days later the attack was over.

*Comments.*—A point of peculiar interest in this case is the patient's lack of natural maternal affection for her child, which in the psychic sphere is comparable to amblyopia or analgesia in the lower sensory mechanism. This in itself is strongly sugges-



tive of hysteria. This same phenomenon was, according to her biographer, Miss Millmine, seen in Mrs. Eddy. The patient has also the same lack of feeling for her husband; and here again her case might be compared to that of Mrs. Eddy. The influence of suggestion on the patient and the absence of dementia argue for the diagnosis, as do also the original character and habits of the patient. The Vorbeireden of Ganser is not seen here in its typical form. But the character of the patient's mutterings and her conduct suggest an assumed foolish character, as does the Vorbeireden of Ganser. This case may be looked upon as one of hysteria of the mental type, whose expression is chiefly in the hysterical character and the recurrent katatonic attacks.

CASE VIII. (Dr. Diller.) The next case is that of a woman 65 years of age, who for fourteen years before her death, in January last, had been subject to recurrent attacks of hysterical delirium. This patient had been under Dr. Diller's continuous observation from March 23, 1906, until her death, on January 15, 1908, a period of nearly two years.

The patient at the time of her death had been a widow for several years, and she was childless. She had been noted in the family as having her own way to a remarkable extent—husband, sisters and all the members of the family had to give way to her. For many years she had a fondness for peculiar diet, from which she could not be persuaded to depart. She ate no meat or eggs; she had an inordinate fondness for pickles and sour tomatoes. The patient was a particularly bright woman, with keen interest in people and things about her.

Fourteen years before her death she developed an attack of insanity which lasted about two years, and during most of which time she was in a hospital for the insane. She was seen by Dr. C. K. Mills during this attack, who diagnosed it as one of hysterical insanity. She recovered entirely from this attack and from time to time had other attacks, each lasting from one to two years. At the time of her death she was for a period of about a month in the beginning of her sixth attack.

Her sister, who had been with her through all her attacks except the first one (and she had seen her in this one several times), declared that the attacks were all alike.

I saw the patient for the first time March 23, 1906. She was at that time in her own home, bedridden by reason of the deforming arthritis. The attack had begun about one year previous to the date of my first visit.

The patient was attended by two nurses, but was under the care of no physician, and she was herself controlling the situation at the house. She made frequent demands for various attentions, kept the nurse awake at night, holding that it was her duty to watch by her, and her sister was compelled to get up at three o'clock in the morning to relieve the day nurse. The pa-

tient slept in the day time, keeping awake at night for the reason—it was believed by members of the family—that the patient did not wish the nurse to sleep at night. She objected to being left alone for a single minute. She made a great many silly rhymes in a half sing song voice. Her conduct was whimsical and paradoxical. The patient was fretful, irritable and extremely unreasonable. If her demands were not satisfied she fell into crying attacks, and if they were still further refused she screamed aloud. She had her own notions about everything—taking medicine, taking food, hours for her own sleep, hours for the nurses' sleep, etc. She refused to take medicine because Dr. So-and-So had warned against it, or because of this or that theory she had read in a book. From time to time she had fleeting delusions and hallucinations of hearing. But with it all her memory was pretty well preserved, and this very fact made it all the harder for the nurses to get on with her. At times she was a great deal confused, but even then she could remember numbers, dates and figures, in a way which was remarkable. She would recall unerringly the date when the rent and interest were due and certain obligations should be paid.

By making a resolute stand at the outset, and supported by the coöperation of the family, and with the aid of the stomach tube, which was called into requisition a few times, I was able, after a few weeks, to bring something like order out of chaos in the household. The patient's objections to my rules were many and vehement. Any slip or inconsistency of nurses or doctors, real or imaginary, were sharply noted by the patient. Insomnia was a persistent symptom.

The patient required attention in various ways. Her deformed legs had to be looked after, sleep produced, diet and bowels regulated, etc. Finally a cystitis developed which caused much annoyance. But these things need not detain us.

Six months after I first saw the patient her mental condition began to improve, and this improvement continued until April, 1907, when I thought her condition normal or nearly so.

From April, 1907, to December, 1907, the patient's mind was quite clear. She attended to much business during this time and made her will. Her memory was excellent; her judgment in business matters good. She took a keen interest in people and things about her. She sent various gifts to old friends and acquaintances. She wished to know the news and gossip of the day and took a lively interest in all these things. She was fond of raillery and joking. She was considerate of her sisters, servants and all about her. A woman of some fortune, she delighted in dispensing her bounty to relieve distress or necessities of those in want. She ate well—indeed she ate too well. She readily took all medicine ordered for her. She was not fault-finding.

She remained in this restored mental state until about the middle of December, when she began to relapse. At this time her sister, who has seen the onset of several previous attacks, was quite sure the patient was going into one of "her old spells." The patient began to complain and be fault-finding. She again refused to take her medicine. Insomnia developed. She had to be urged to eat. She began to talk about her soul being lost and the dread of poverty, etc. Her joviality and good-natured banter and loquaciousness of a month ago have entirely disappeared. She now desired the nurse to be in the room constantly. Her old dread of being alone returned. She became unmindful of the comfort of the nurses and her sister. She became peevish, complaining, fretful. She complained in a vague way that "Something is wrong; things are not right in this house." Again she dreaded poverty and wished to exercise petty economies.

On the tenth of January she suffered from an acute attack of cardiac failure with uremic symptoms and expired five days later.

*Comments.*—It is extremely difficult to give anything like an adequate description of this case, especially in a brief account. Much could be appreciated in seeing the patient from time to time which could hardly be set down in writing. But three points stand out prominently. First, the original character of the patient. She was self-willed and notionate to a marked degree. Secondly, the chief characteristics of her attacks were peevishness, stubbornness, childishness, fault-finding. In her attacks, her desire to have her own way was marked. Thirdly, and very important, the fact that after recovering from the fifth attack of insanity the patient exhibited no residual dementia whatever.

On the negative side, her attacks of insanity were quite different from those of any well-known psychoses. We look upon the case as one of recurrent hysterical delirium.

[*Note.*—We had originally prepared as part of this paper three cases exhibiting Dämmerzustand or Vorbeireden in which the diagnosis of hysterical insanity appeared to us as doubtful. But it is perhaps unnecessary to detail these cases. Suffice it to repeat that the differential diagnosis between precocious dementia and hysterical insanity has been the problem which has presented itself in these three cases which we regard as one of great importance.]

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# Society Proceedings

## AMERICAN NEUROLOGICAL ASSOCIATION.

THE THIRTY-FOURTH ANNUAL MEETING HELD AT THE COLLEGE OF PHYSICIANS, MAY 20, 21 AND 22, 1908.

The President, DR. CHARLES W. BURR, in the Chair.

*(Continued from Vol. 35, p. 785.)*

### THE TYPES OF ENCEPHALITIS.

By E. E. Southard, M. D.

The writer here considers the exudative forms of encephalitis only. The analysis is based on acute and chronic hospital material. The cases considered fall into three groups: (1) Acute, including coccal and typhoidal forms; (2) subacute, including tuberculous and luetic forms; and (3) progressive (dementia paralytica.) These groups are discussed comparatively from three points of view: (a) The nature of the exudates, with particular reference to the plasma cell; (b) the incidence of vascular lesions; and (c) the main features of the glioses shown.

#### DISCUSSION.

Dr. W. G. Spiller said he understood that Dr. Southard did not exclude the possibility of cerebral purulent processes having their origin in disease of the lungs. That view was held extensively in 1893 in Vienna.

Dr. Spiller has had three cases of localized encephalitis, not the kind to which Dr. Southard referred, in which hemorrhagic infiltration was almost confined to the cortex and resembled closely poliomyelitis, in its limitation to the gray matter.

Dr. Southard asked whether Dr. Spiller remembered what organism was responsible for the encephalitis in his cases. The acute hemorrhagic encephalitis of the books is quite frequently due to the *Staphylococcus pyogenes aureus*.

In four of six cases of aureus encephalitis there were areas of frank and somewhat voluminous hemorrhage as a rule in the subcortical region due to ruptures of the medullary vessels or to oozing therefrom.

More work should be done on these lines, so that the somewhat sharply marked pathogenic properties of different organisms—the hemorrhagic tendency of the aureus, the extensive fibrin formation characteristic of the pneumococcus, the rapidly fatal serous exudation found with the streptococcus, the vascular lesions so characteristic of both pneumococcus and streptococcus disease as compared with the lack of vascular lesions in meningococcus disease—might be in future of more clinical aid. Here is a field in which structural pathology has for the moment outstripped the functional. Marchi work and myeline sheath work are by no means to be

neglected, but these methods do not appear to be solving the central problems of encephalitis. Bacteriological work may not solve these problems, but is a *conditio sine qua non* for their solution.

Dr. Spiller said he could not say what organisms were present as no cultures had been taken by the pathologists.

Dr. J. Ramsay Hunt read a paper entitled Occupation Neuritis of the Deep Palmar Branch of the Ulnar Nerve. A Well-defined Clinical Type of Professional Palsy of the Hand. (See this journal, vol. 35, p. 673.)

#### DISCUSSION.

Dr. Frank W. Langdon, of Cincinnati, said we were indebted to Dr. Hunt for the care with which he had worked out the anatomical differentiation of this interesting form of occupation neuritis. He desired simply to call to the notice of the Association a case that he saw some years ago in London which was under his observation for some weeks, that presented a somewhat similar puzzling syndrome. In that case the question of a myelopathy or spinal muscular atrophy came up. The patient was quite a young man, between 18 and 20. Dr. Langdon thought there was no degeneration reaction and no sensory disturbance but the patient had this characteristic atrophy of some of the muscles of the hand and a weakness of the shoulder. On tracing his occupation, Dr. Gowers, in whose service the patient was, considered it an occupation atrophy rather than a neuritis in the ordinary sense, because there were no acute symptoms or tenderness, and while there was atrophy there was no complete degeneration such as Dr. Hunt describes. It was a noteworthy fact, however, that this man was a confectioner's assistant whose occupation was to beat eggs—the English at that period had apparently not discovered the Yankee invention of an egg beater by machinery, or at least did not use it in this instance,—and this man beat eggs for 12 to 14 hours a day, so that the action of the shoulder muscles and the little muscles of the hand were very much overtaxed. Dr. Langdon did not know the final outcome of the case. He did not have the sensory or cramp symptoms such as scrivener's palsy gives rise to. Egg-beater's palsy, therefore, went down on record as a form of occupation neuroses or atrophy of the muscles. This case indicates how careful we must be in investigating the occupation, and not be too hasty in deciding because we have atrophy beginning in one group of shoulder girdle muscles or small muscles of the hand that it is necessarily going to terminate as a progressive muscular atrophy. It also calls to mind another possibility, and that is, it shows a reason for the peculiar distribution in the typical cases of progressive muscular atrophy. It would suggest from the peculiar picking out of certain cells in the cervical cord that there was very likely vulnerability on the part of those cells which serve a very complicated delicate function in the use of the fingers, and extensive versatility of movement in the shoulder joint, which we know is hardly matched in any other animal. Not even in the monkey does it exist in the same degree that it does in man (the circumduction motion). The cases are certainly very interesting and will direct our thoughts in some other channel than that of progressive spinal muscular atrophy in those cases where there is a possibility of overuse.

Dr. Knapp said he would like to add a word in appreciation of the very careful work in explanation of these cases. He had seen a good many cases of atrophy of small muscles of the hand, many of which had been diagnosed as the beginning of spinal myelopathy in earlier days, and

he had been surprised to find that they did not progress but on the contrary showed very decided improvement, until experience led him to the belief that many of them were not spinal cases at all, but were due to the effect, as he had supposed at the time, of pressure upon the muscles themselves. He was afraid he had not always made the distinction which Dr. Hunt has drawn between the cases with wasting of ulnar branches alone and wasting involving also the thenar eminence, but certainly this explanation of Dr. Hunt's is exceedingly convincing. Dr. Knapp thought the Association owed him thanks for the work he had done.

Dr. Philip Coombs Knapp, Boston, read a paper entitled, Confusional Insanity and Dementia Præcox. (See this journal, vol. 35, p. 609.)

#### DISCUSSION.

Dr. F. W. Langdon said he quite agreed with the essayist as to the importance of differentiating the so-called confusional psychoses from the more definite disease dementia præcox. He thinks it is not always easy on short acquaintance to do so, but few cases are seen, at least in the institutions with which he is connected, in which the differentiation cannot be made, given sufficient time. Time is a very important factor, a few days even may suffice. Correct diagnosis is exceedingly important for the reason stated by the essayist that a very much more favorable prognosis is warranted in the acute confusional types, no matter how stuporous. If we can trace the stupor to simple exhaustion so much the better. With respect to terms Dr. Langdon thought the term *amentia* is fully as objectionable as the term *dementia præcox*. It properly applies to patients who have never had any minds, and is really idiocy in greater or less degree. It would seem that the term *confusional insanity* is much to be preferred. We may say the same in regard to *dementia præcox* cases, developed late in life, at or about 50. It seems better to use the term *primary dementia* for these cases at least, and it does not commit us to any precocious ideas. It does not seem essential that every primary dementia should be *dementia præcox*. Since we have not worked out all the causes of dementia we are not warranted in assuming all those which are not paresis or senile dementia, to be *dementia præcox*, which is perhaps a too prevalent tendency. With respect to the remark of the essayist that primary dementias or *dementia præcox* may reach a stationary stage and not deteriorate for many years, Dr. Langdon thought this was not a safe criterion. He can recall very distinctly one of those regular habitues of the clinic in his student days, one of those convenient patients who were utilized to teach all sorts of physical examinations to the classes, who made the regular rounds of the clinics when she was not in the City Hospital. This same patient came under his care at the City Hospital at various times, the last time when she was over 50 years old. She was then bright, clean, fresh looking, had as much mental capacity as she ever had, was doing laundry work. She had evidently been a high grade imbecile at the start. She had gotten to her level and was happy and comfortable and had not deteriorated any more than when she was in the clinics twenty-five years before.

Dr. Alfred Gordon said in respect to the term *dementia præcox*, in many cases the element of mental enfeeblement is not a sufficient reason for the diagnosis of *dementia præcox*. The tendency now is that with this symptom, as soon as the age is learned, the diagnosis of dementia

præcox is jumped at. It is true also that there are cases which present the typical picture. The question of curability of dementia præcox is a very difficult one to decide. Dr. Gordon said he knew very well that cases of complete recovery have been recorded, but when you examine these patients minutely again and again, they still show mental deficiency. As to the cases that came under his observation for a period of ten or twelve years, he can safely say that while they improved a great deal in regard to their episodic disturbances, such as confusion, delusions, etc., the element of mental enfeeblement remains. From his experience the term of confusional insanity can be applied with perfect safety only to the toxic and infectious cases. Confusion following intoxication of organic or inorganic nature may ensue, it lasts for weeks or even months, but a pure confusional insanity of a chronic nature is doubtful. On the whole he would say that the elements of psychiatry are far from conclusive. A great deal of study is to be looked for and no man has a right to say that he is absolutely certain of the diagnosis of these doubtful cases as we frequently see it done in and out of asylums.

Dr. E. E. Southard, Boston, said he was struck by one statement in Dr. Knapp's abstract, that "it is not easy to distinguish between profound stupor and dementia." Neither is it easy to distinguish sleep from narcosis in certain instances, or even life from death. But these difficulties in distinguishing are practical difficulties due to the inadequate number of facts at hand, and not logical difficulties inherent in the nature of stupor and dementia. Although there may be diagnostic difficulties in this field, for a single clinical visit, the differential diagnosis will not long be held in abeyance if the patient is long enough observed. Dr. Knapp would probably agree that there were two groups of cases, basing the distinction on duration of symptoms alone.

The Danvers Hospital cases of Meynert's amentia often proved to be infectious in origin.

Dr. Southard could not see the advantage of the term sensory phrenosis, to which he objected on etymological grounds.

Dr. Knapp, in closing, said that Dr. Langdon stated that we can differentiate between early cases of confusion and dementia if we take the time. In many cases it is a very simple matter to differentiate between these types in comparatively little time. We can differentiate very readily sometimes between acute confusion of toxic or infectious character, the simple case which does not show very marked symptoms, and the case of rapidly developing mental defect with all the classical features. It may be a perfectly simple matter to make that differentiation, you can sometimes make it in walking through the wards of the hospital, but the difficulty is in differentiating between the cases; and in regard to these transitional cases we often lack definite criteria which enable us to draw the lines sharply. We can distinguish between the cases which Bianchi claims present sensory phenomena, hallucinations, etc., after a brief period and then passing to mental deterioration, and the cases which pass into a state of mental deterioration without these preliminary phenomena of confusion, hallucinations and the like, but this is again not always easy. Dr. Gordon emphasizes the point that there are different types of these cases. That Dr. Knapp tried to bring out in his paper. There are different types of dementia præcox—the simple, the katatonic and the paranoid forms of Kraepelin. There are also the transitional types passing from one to the other.



Furthermore, there are the cases in which perception and orientation are much impaired. Kraepelin seeks to make that a distinction. Unfortunately, the individual case may show good perception and orientation at one stage and impairment of perception and orientation at another stage. Shall we change the diagnosis with this change in symptoms? The mental enfeeblement, also, is often seen and has been regarded as a distinguishing feature. It is by no means an easy matter when a case presents most of the classical symptoms of dementia præcox and makes a recovery such as the case Dr. Knapp referred to, to say that that case is a case of acute confusion and that another case presenting similar phenomena, which does not recover and stays in a state of mental deterioration, is a case of dementia præcox. If one waits long enough undoubtedly the stupor may pass into a terminal dementia, but at the time the patient comes under observation it is by no means easy to determine whether it is simply a stuporous state or dementia. The nomenclature is unfortunate. Meynert's amentia is a bad term. Dr. Knapp did not think Bianchi's sensory phrenosis will be upheld. Some patients show marked mental deterioration, others do not. To emphasize the element of dementia is a bad thing. Our means of differentiation are still uncertain and the cases show such a gradation from the simple to the more severe that although we can determine the end states very well, it is a difficult matter to draw the lines in the middle and say which case should be put in this category and which in the other.

#### FACIAL PARALYSIS.

By G. A. Waterman, M.D.

A study of a series of cases observed during the past seven years with special reference to the relative number of mild cases as compared with those presenting a reaction of degeneration. Relation of age of the patient to completeness of recovery when the nerve is degenerated. Causes of secondary contracture. Prevalence of attacks of paralysis in varying months of the year. Value of the initial pain as a prognostic factor. Value of electricity in diagnosis at onset and in subsequent treatment as determined by results. (*To be published in this journal.*)

#### PROGNOSIS OF SPINAL-CORD TUMORS WITH OPERATION.

By William C. Krauss, M.D.

An analysis of 150 cases showing marked improvement in prognosis, dependent upon early diagnosis and choice of operable cases. Favorable prognosis in cases of cysts and sarcomata.

Dr. Alfred Reginald Allen read a paper entitled, Delayed Apoplexy (Spätapoplexie) with Report of a Case. (See this Journal, vol. 35, p. 763.)

#### DISCUSSION.

Dr. C. K. Mills said that the subject which was one of very great importance was ably treated in this paper. Many years ago he became familiar with the experiments of Duret and made a considerable number of observations upon cranial traumatism and also upon cerebral apoplexies regarded as traumatism from the inside, the hemorrhage striking the blow rather than an instrument applied externally.

# Periscope

## Revue Neurologique

(Vol. 15, No. 17. Sept. 15, 1907.)

### 1. Neuro-phagocytosis in Transplanted Spinal Ganglia. J. NAGEOTTE.

1. Concerning the part played by the neuroglia and endothelial cells and the cells of Cajal in phagocytosis of the nerve cells in the spinal ganglia, also the topography of the canals of Holmgren. The author concluded that the regularity of these canals is not accidental but is in relation to the normal structure of the nerve cell.

(Vol. 15. Sept. 30, 1907.)

### 1. Tabes and Syringomyelia. A. SOUQUES and A. BARBÉ.

### 2. Exophthalmic Goitre in Animals. PAUL SAINTON.

### 3. Intermittent Claudication of Cerebral Origin. FR. MEEUS.

1. *Tabes and Syringomyelia*.—Report of a case of tabes and syringomyelia with autopsy and histologic examination.

2. *Exophthalmic Goitre in Animals*.—This disease has been observed in dogs and other animals. The symptoms were emaciation, tachycardia, enlarged thyroid and exophthalmos. A bibliography is appended.

3. *Intermittent Claudication*.—Reporting a case of intermittent hemiplegia in a case of general paralysis of the insane.

(Vol. 15. Oct. 15, 1907.)

### 1. Oculomotor Phenomena of Cutaneous, Labyrinthine and Cochlear Origin in a Tabetic, their Significance. M. G. ETIENNE.

### 2. Herpes of the Face and the Cervical Sympathetic Syndrome in a Tabetic. E. JEANSELME and SEZARY.

1. *Oculomotor Phenomena*.—In a tabetic the eye symptoms were partial atrophy of the optic nerves, absence of reaction to accommodation and light, and divergent strabismus with diplopia. On rapidly opening the eyes there was produced a rapid divergence followed by an equally rapid return of the eyes to their habitual position, the left remaining partially divergent. An electro-diagnostic examination of the muscles and oculomotor nerves showed no evidence of modification of their excitability. The author concluded therefore that there was no muscular or neuritic lesion in the oculomotor apparatus but that it was an ataxia.

2. *Herpes of the Face*.—An eruption of herpes zoster on the left side of the face and lips accompanied by inequality of the pupils, the left being smaller, and a sensation of tension and of cold in the left side of the face. Examination showed a marked difference in the skin temperature on the two sides. The diagnosis was cervical sympathetic syndrome with absence of palpebral trouble. The case bears on two obscure problems, the role of the sympathetic in tabes, and the pathogenesis of herpes.

(Vol. 15. Oct. 30, 1907.)

1. Family Spastic Paraplegia. COURTELLEMONT.
2. The Reason Why Some Hemiplegics Find it Impossible to Simultaneously Elevate Both Legs. L. BYCHOWSKI.

1. *Family Spastic Paraplegia*.—Report of a case of spastic paraplegia with incontinence of urine, some vasomotor trouble and paresis of the left orbicularis palpebrarum. There were no changes in sensation or in the special senses and speech and intelligence were normal. There was no muscular atrophy and no lymphocytosis in the cerebrospinal fluid. The condition appeared insidiously at the age of fifteen years and a similar condition was present in the patient's mother, brother, and sister.

2. *The Reason Why Some Hemiplegics Find it Impossible to Simultaneously Elevate Both Legs*.—The author doubts the mechanical theory of Grasset that the reason is simply the lack of fixation on the paralyzed side and defends his own, that it is due to the fact that the leg has regained its power from innervation on the same side of the brain and that it is impossible that homolateral and contralateral impulses should leave the cerebral hemisphere simultaneously.

(Vol. 15. Nov. 15, 1907.)

1. Plasticity and Ameboidism in the Cells of Sensory Ganglia. MARINESCO.

1. Numerous descriptions and illustrations of the formation of protoplasmic processes in nerve cells in auto transplanted sensory ganglia. They are probably due to variation in the osmotic tension of their surroundings.

(Vol. 15. Nov. 30, 1907.)

1. Treatment of Trifacial Neuralgia by Deep Injections of Alcohol. BRISSEAU et SICARD.
2. Mental Symptoms of Superficial Diffuse Cerebral Sclerosis. L. MARAHAND and H. NOUET.

1. *Treatment of Trifacial Neuralgia*.—Results obtained in forty-four cases. The technique employed is described in detail together with the accidents and results. The best therapeutic results were obtained in those cases called "essential" and which had not been previously operated upon. The injection may relieve the pain but not produce anesthesia in the territory to which the nerve is distributed but in general the perfection and duration of the cure is proportional to the degree and duration of the anesthesia.

2. *Mental Symptoms of Superficial Diffuse Cerebral Sclerosis*.—The different syndromes produced by diffuse superficial cerebral sclerosis are: First, paralytic, complete or incomplete; second, mental troubles with few motor; third, mental only and no motor. In the first the absence of lymphocytosis and mental change makes the diagnosis from paresis. In the second the exaggeration of the knee jerks with absence of the cutaneous plantar reflex and also the negative spinal fluid is characteristic. Mentally there is idiocy or imbecility or dementia precox or systematized or circular insanity according to age. Cases of the third class are rare and diagnosis must often be made by exclusion. The symptoms are due to a destruction of the tangential fibres.

(Vol. 15. Dec. 15, 1907.)

1. Amyotrophy of the Arms and Thorax Without Sensory Symptoms, Syringomyelia probable. FÉLIX ROSE and HENRI FRANÇAIS.

1. The atrophy was preceded by flaccid paralysis and accompanied by reaction of degeneration in the muscle. There was exaggeration of the knee jerks and Achilles jerks.

(Vol. 15. Dec. 30, 1907.)

1. Absence of the Optic Tracts, the Chiasm and the Optic Nerves; Agenesis of the Corpus Callosum, the Trigonum and the Anterior and Posterior Commissures. M. LUCIEN.
2. Contribution to the study of the Pathological Anatomy of Peripheral Facial Palsy and of Facial Hemispasm. ANDRÉ THOMAS.

1. *Absence of the Optic Tracts*.—Brain from an infant four months of age showed these rare malformations.

2. *Pathological Anatomy of Peripheral Facial Palsy*.—Report of three cases with autopsy. In a woman, aged seventy-five years, the paralysis appeared suddenly eighteen days before death. The nerve was found degenerated but no focus of inflammation was discovered. In two cases of longer duration in which there had been some spasmodic contractions in the paralysed muscles, histological examination showed a "neuroma of regeneration."

C. D. CAMP (Ann Arbor).

### Miscellany

THE INDICATION OF MECHANICAL ABORTION IN PSYCHICAL DISEASES. M. Friedman, Deutsche medizinische Wochenschrift, May 21, 28, and June 4, 1908.

Friedman states that hitherto instrumental abortion was commonly considered in relation to gestation and puerperal psychoses and it was believed that they exerted no active influence upon the development and course of the psychosis. He holds with Jolly and A. Pick that mechanical abortion is indicated in such cases which show definite "psychopathic reactions." The patients exhibit a poorly resistant psychic and neuropathic constitution and their fears over the approach of childbirth become exaggerated, and extremely morbid. This pathological apprehensive mood, unlike in normal cases, is so markedly intense that suicide may ensue. Moreover these patients' thoughts and feelings are controlled by fears which persist in third and fourth month without mitigation or amelioration. This psychogenic disease is differentiated from true psychoses by the fact that the psychic affect originates within the life of the individual, and furthermore with establishment of an abortion complete recovery occurs. And in five of the author's cases mechanical interference of pregnancy was of decided benefit to the patients. Friedman emphasizes that there are two main dangers accompanying these cases, viz., suicide, and general bodily reduction, both are secondary to apprehension. In order to perform an abortion in such instances, it is advisable to consult another physician of good professional standing and receive his co-operation and assistance.

KARPAS (Ward's Island, New York).

## Notes and News

### MEDICAL INTERNE (FEMALE).—GOVERNMENT HOSPITAL FOR THE INSANE, JANUARY 13, 1909.

The United States Civil Service Commission announces an examination on January 13, 1909, at the places mentioned in the list printed hereon, to secure eligibles from which to make certification to fill a vacancy in the position of medical interne (female), Government Hospital for the Insane, Washington, D. C., at \$600 per annum with maintenance, and vacancies requiring similar qualifications as they may occur in the hospital. Right reserved to terminate the appointment at the expiration of one year of service if advisable. Qualified persons are urged to enter this examination. The examination will consist of the subjects following:

(1) Letter-writing (the subject-matter on a topic relative to the practice of medicine), 5; (2) Anatomy and physiology (general questions on anatomy and physiology, and histologic or minute anatomy), 10; (3) Chemistry, materia medica, and therapeutics (elementary questions in inorganic and organic chemistry, the physiologic action and therapeutic uses and doses of drugs), 15; (4) Surgery and surgical pathology (general surgery, surgical diagnosis, the pathology of surgical diseases), 20; (5) General pathology and practice (the symptomatology, etiology, diagnosis, pathology, and treatment of diseases), 25; (6) Bacteriology and hygiene (bacteriologic methods, especially those relating to diagnosis; the application of hygienic methods to prophylaxis and treatment), 10; (7) Obstetrics and gynecology (the general practice of obstetrics; diseases of women, their pathology, diagnosis, symptoms, and treatment, medical and surgical), 15; total, 100.

Applications will be accepted only from persons graduated from reputable medical colleges not more than two years prior to the date of examination. Unmarried women only admitted to examination. This examination is open to all citizens of the United States and aliens who have declared their intention to become citizens, who comply with the requirements: *Provided*, That these aliens, if found eligible, shall not be certified for appointment so long as persons are eligible who are citizens of the United States. Age limit, 20 years or over on the date of the examination.

*This announcement contains all information which is communicated to applicants regarding scope of examination, vacancy or vacancies to be filled, and qualifications required.*

Applicants should at once apply either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the board of examiners at any place mentioned in list hereunder for application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application. As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applica-

tions be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will therefore arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers.

ALABAMA, Birmingham, Mobile, C. H., Montgomery. ARIZONA, Phoenix, Prescott, Tucson. ARKANSAS, Fayetteville, Fort Smith, Little Rock, Texarkana. CALIFORNIA, Eureka, Fresno, Los Angeles, \*Marysville, Sacramento, San Bernardino, San Francisco, San Jose, San Luis Obispo. COLORADO, Denver, Durango, Fort Collins, Grand Junction, Pueblo, Trinidad. CONNECTICUT, Hartford, C. H., Middletown, New Haven. DIST. OF COLUMBIA, Washington. FLORIDA, Gainesville, Jacksonville, \*Key West, Miami, Pensacola, \*Tampa. GEORGIA, \*Athens, Atlanta, Augusta, Macon, Savannah, \*Thomasville. HAWAII, \*Honolulu, C. H. IDAHO, Boise, Moscow. ILLINOIS, Cairo, Champaign, Chicago, Peoria, Quincy, Springfield. INDIANA, Bloomington, Evansville, Fort Wayne, Indianapolis, Lafayette. IOWA, \*Ames, Burlington, Des Moines, Dubuque, \*Fort Madison, Iowa City, \*Mason City, Sioux City. KANSAS, Emporia, Fort Scott, Lawrence, Manhattan, Salina, Topeka, Wichita. KENTUCKY, Lexington, Louisville, Paducah. LOUISIANA, Baton Rouge, New Orleans, C. H., Shreveport. MAINE, Bangor, Bath, Calais, C. H., Houlton, Lewiston, Portland. MARYLAND, Baltimore, Cumberland, Salisbury. MASSACHUSETTS, Boston, Fall River, Fitchburg, Lawrence, Lowell, Pittsfield, Springfield, Worcester. MICHIGAN, Ann Arbor, Detroit, Grand Rapids, Manistee, \*Marquette, Saginaw, Sault Ste. Marie. MINNESOTA, Duluth, Mankato, St. Paul. MISSISSIPPI, Greenville, \*Meridian, Vicksburg. MISSOURI, Columbia, Jefferson City, Kansas City, Kirksville, Springfield, St. Joseph, St. Louis, Old C. H. MONTANA, \*Billings, \*Bozeman, Butte, \*Great Falls, Helena, Missoula. NEBRASKA, Grand Island, Lincoln, Omaha. NEVADA, \*Reno. NEW HAMPSHIRE, Concord, Hanover, Keene, Manchester, Portsmouth. NEW MEXICO, Albuquerque, Las Vegas. NEW YORK, Binghamton, Buffalo, Elmira, Ithaca, Jamestown, New York, C. H., Ogdensburg, C. H., Plattsburg, C. H., Poughkeepsie, Rochester, Syracuse, Troy, Utica, NORTH CAROLINA, Asheville, Charlotte, \*Durham, Goldsboro, Greensboro, Raleigh, Wilmington. NORTH DAKOTA, Bismarck, Fargo, \*Grand Forks, \*Minot, \*Pembina, C. H. OHIO, Cincinnati, Cleveland, C. H., Columbus, \*Ironton, Toledo, Zanesville. OKLAHOMA, Ardmore, Enid, Guthrie, McAlester, Muskogee, Oklahoma. OREGON, Astoria, C. H., Baker City, Eugene, Portland. PENNSYLVANIA, \*Altoona, Harrisburg, Philadelphia, Pittsburg, \*So. Bethlehem, \*Warren, Williamsport, Wilkes-Barre. PORTO RICO, \*San Juan. SOUTH CAROLINA, Charleston, Columbia, \*Greenville. SOUTH DAKOTA, Aberdeen, Deadwood, Sioux Falls, Watertown. TENNESSEE, Bristol, Chattanooga, Knoxville, Memphis, Nashville. TEXAS, Austin, \*Brownsville, C. H., Dallas, El Paso, C. H., Houston, San Antonio, Waco. UTAH, \*Logan, Salt Lake City. VERMONT, Burlington, Montpelier, Rutland, St. Johnsbury. VIRGINIA, \*Charlottesville, \*Lynchburg, Norfolk, Richmond, Roanoke, Staunton. WASHINGTON, Bellingham, Port Townsend, C. H., Pullman, Seattle, Spokane, Tacoma, Walla Walla. WEST VIRGINIA, Charleston, Fairmont, Parkersburg, Wheeling. WISCONSIN, Appleton, Ashland, Chippewa Falls, La Crosse, Madison, Marinette, Milwaukee, Wausau. WYOMING, Cheyenne, \*Laramie, Sheridan.

\* Boards of Pension Examining Surgeons are located at all places mentioned in this list, *except* those marked thus: \*.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### FACIAL PARALYSIS: A STUDY OF THREE HUNDRED AND THIRTY-FIVE CASES <sup>1</sup>

BY G. A. WATERMAN, M.D.

About five years ago, being impressed by the frequency with which patients, suffering from facial paralysis, were presenting themselves at the Out Patient Department of the Massachusetts General Hospital, I became interested in following a series of cases, in an attempt to determine whether those in which a complete R. D. was found made a more rapid or more perfect recovery when treated by galvanism. In pursuing this line of investigation, various questions suggested themselves for solution, viz.: Is exposure to cold an important factor in the etiology? Do the attacks occur with much greater frequency in the winter months? Are the patients, affected in the later years, more liable to the severe form of paralysis than the young or middle-aged? Does continued galvanic treatment play any role in the predisposition to secondary contraction? Is the initial pain of any prognostic value regarding the severity of the attack?

In order to study a sufficient number of cases, to make these statistics of value, I have attempted to see and examine personally all the patients coming to the neurological department for facial paralysis during the past five years and have made use of the hospital records of such cases for the three years preceding this period. To this number of cases I have added the data of those which I have seen in my practice and through the courtesy of

<sup>1</sup>Read at the thirty-fourth annual meeting of the American Neurological Association, May 20, 21 and 22, 1908.

my colleagues, making in all a series of 335. This number represents only the neuritic type of facial paralysis, all cases due to ear disease, cerebral syphilis, fracture of the base, tumors and glands being excluded.

The question as to whether males are more frequently affected than females, has been considered by numerous investigators in studying the condition. The greater exposure necessitated by the occupations of men, would lead one to expect men to be more prone to the disease than women, and while this is literally true, the variation between the two sexes is so slight that it needs no theory as to its cause.

Gowers (1) in 112 cases found 66 in males and 46 in females; Bernhardt (2) in a series of 57 cases, published in 1888, found 34 in men and 23 in women, while in a second series, published four years later (3), he found 32 men and 23 women. Hübschman (4), in 99 cases, treated during 14 years in the University Polyclinic at Leipzig, found 54 males and 45 females. Sossinka (5), in his inaugural dissertation at Leipzig, reported 300 cases of facial paralysis from Mendel's Polyclinic at Berlin; unlike the above authors, he found a preponderance of cases among females in the ratio of 172 females to 128 males.

My own series of 335 cases shows 191 males and 144 females. Taking the combined sums of these series, it gives us a total of 968 cases, and shows that among this number of patients 52 per cent. were male and 48 per cent. female; a difference which can almost be considered negligible.

Whether the right or left side is more frequently affected, can have no especial importance other than to be of passing interest. Bernhardt (3) found 63 of his cases of paralysis to be right-sided and 49 to be on the left, while Hübschman (4) found 48 to be on the left and 47 on the right side. In those cases in which the side paralyzed is recorded in my series, the right nerve was affected 163 times and the left 157 times, while in two instances both sides were involved. There, as in the consideration of the sexes, the difference is so slight, compared with the number of cases considered, that we may conclude the two sides equally liable to paralysis.

The changes occurring in the nerve in facial paralysis have now been fairly extensively studied by a number of investigators, and the conditions found in the different cases show very little



variation in the pathology. Minhowski (6) in 1890 was the first to describe the pathology of the condition, and called attention to the fact that this process was one of simple parenchymatous degeneration without swelling. This was corroborated by the report of Dejerine and Theohari (7) in 1897, and Myer (8) in the same year described the condition in this country. Since then, Mirallié (9), Alexander (10) and André Thomas (11) have all described essentially the same condition.

The degeneration of the axis cylinders is found in the peripheral ramifications of the nerve, and persists as far up as the geniculate ganglion, although the trunk shows no evidence of an inflammatory process. André Thomas (11) found the axis cylinders to be somewhat swollen beyond the geniculate ganglion, although they became rapidly normal in appearance as they approached the medulla. The cells of the facial nucleus are uniformly described as being in various stages of chromatolysis.

If then the process causing facial paralysis is a parenchymatous degeneration, such as we find in toxic forms of neuritis, rather than an inflammatory condition, what are we going to accept as the predisposing factors of the attack?

Neumann (12) has maintained that an hereditary neuropathic taint plays an important part in predisposing the individual to an attack. He gives the histories of 37 patients who suffered from Bell's paralysis and showed that in 24 of these patients there was a record of nervous disease in the near relatives. Insanity was found in ten families and epilepsy in seven. In five of his cases, facial paralysis had occurred in other members of the family: in one three sisters suffered from attacks, and in another, three sisters, together with a child and a grandchild of one, had been affected. This series of Neumann is certainly a remarkable one and in itself is significant. It has been much quoted, and Despaigue (13), in his treatise on the subject, expresses himself as also believing that a neuropathic family history predisposes to attacks. I must confess, however, that I am not in sympathy with this view, for many inquiries on this point with patients has led me to believe that neuropathic relatives are no more frequent in families of those stricken with facial paralysis than are found in families taken at random.

Williams (14) in a report of a case of facial paralysis, appearing in a woman the day after her child fell from her arms,

suggests that fright may play a part in the causation of an attack. I have twice seen attacks follow emotional excitement; in one instance the attack came the day after the patient had been run away with by a horse, and in the other case it followed the shock of a sudden death in the patient's family. Such instances are exceptional, however, and may be regarded more in the nature of a coincidence than as illustrative that emotional disturbance is an etiological factor in facial paralysis.

The fact that attacks may have a tendency to recur in the same individual, or may appear in other members of the family, is explained by Sarbo (15) on the ground that there may be an inherited anomaly or narrowing in the bony canal of the nerve. He thinks the paralysis is due, not to an infection, but rather to an alteration in circulation in the nerve, giving rise to pressure.

Stenger (16), in a collection of cases, demonstrated a large aural canal, which he believes allows free access to the cold, so that the ear becomes affected and causes a secondary involvement of the facial nerve. He thinks that the early ear symptoms are frequently overlooked by the physician.

Reik (17) also considers the ear to be of importance in the etiology of the neuritic form of facial paralysis. He has made a study of 300 temporal bones and finds that one-half of these have a perforation from the tympanic cavity to the Fallopian canal, other than the two normal ones for the chorda tympani and the stapedius branch of the nerve. In this way exposure to cold causes an acute otitis media with inflammatory swelling of the mucous membrane, which may extend through the perforation or a dehiscence in the canal wall to involve the facial nerve. He examined 12 cases from Dr. Thomas' clinic, 10 of which had had initial aural pain, and found positive evidence of middle ear disease in all cases. In conclusion, he makes the claim that "In the majority, if not all, cases of refrigeratory facial paralysis, an acute or subacute otitis media is an intermediary condition between the exposure to cold and the appearance of the paresis."

Since the publication of Reik's paper four years ago, I have made a special effort to have all cases of facial paralysis, presenting themselves early in the course of the disease, referred to an aurist, for a report as to the condition of the middle ear. Of course a large majority of the cases do not seek hospital aid until after the first week, so that any ephemeral congestion of the ear

may have disappeared at the time of the out-patient's examination. For this reason I have included, for the determination of aural complication, only those cases in which the examination was made during the first seven days. In twenty-two cases reports have been returned from the aurist, nineteen of which declared the middle ear to be normal, while three described a mild degree of congestion, a ratio which is far from being in accord with Reik's findings.

Whether the neuritis is a primary one, or is secondary to an inflammatory process of the middle ear, there can be no doubt that exposure to cold winds and draughts plays a part in the causation of an attack. Neumann (18) rejects this theory, however, and maintains that the factors acting to cause an attack of facial paralysis are: (1) A diminished power of resistance of the nerve, acquired or hereditary; (2) the action of substances on the nerve as urea and uric acid, etc., or the toxins of such diseases as syphilis or diabetes; (3) diminished power to act against these substances on account of the lessened resistance of the protecting cells of Schwann's sheath and the connective tissue. He believes that this resistance may be lowered by shock or trauma, or from injury, resulting from the obstruction to the flow of secretion from the glands which surround the nerve at its point of exit from the stylomastoid foramen.

The theory that the action of some toxic substances on the nerve plays an important role in the etiology of attacks, seems to be borne out by the fact that a retrobulbar optic neuritis may occur in individuals who have previously been affected with facial paralysis. Such cases have been reported by de Schweinitz (19) and Schumway (20) and, although in all three cases described, the optic neuritis did not manifest itself until one or two years after the facial paralysis, it may be taken as an indication that the patient was liable to such toxic agents.

Although it is true that paralysis of the facial muscles often occurs without a history of direct exposure to cold, I am convinced that this history is to be too often obtained to admit the possibility of coincidence. If, however, the degree of exposure or intensity of the cold is the primary cause, we should expect to find attacks of facial paralysis to occur more frequently in the winter months. Gowers (1) states that attacks are more frequent in the winter than in the summer months. Bernhardt (3)

and Hübschman (4) have both given tables, illustrating the months of onset of attacks, dividing their cases into mild, medium and severe classes. These results I have tabulated below, without reference to the severity of the disease, together with my own.

	Bernhardt.	Hübschman.	Waterman
January .....	7	7	27
February .....	3	9	23
March .....	1	3	28
April .....	5	7	22
May .....	5	2	22
June .....	6	9	32
July .....	2	7	20
August .....	5	3	23
September .....	7	8	33
October .....	1	7	30
November .....	6	8	27
December .....	5	7	24

A division of my cases into the mild type, as contrasted with those showing a partial or complete reaction of degeneration, is also illustrated by the following table. Some of the cases, tabulated above, do not appear in this division however, since the hospital records occasionally fail to show a record of the electrical examination.

	Mild.	Severe.
January .....	6	17
February .....	7	15
March .....	14	9
April .....	7	12
May .....	5	14
June .....	13	17
July .....	9	14
August .....	5	13
September .....	10	20
October .....	6	18
November .....	2	15
December .....	5	16

It is apparent from these figures that the degree of cold is not the important factor in the causation of facial paralysis, for were it so, in a climate such as ours, where the extremes of temperature are so great in the summer and winter, we should expect a considerable difference in the number of cases appearing in these seasons. As a matter of fact, not only does the average of the different months seem to be almost a uniform one, but neither do the mild cases appear more frequent in the summer, nor are the severe ones more numerous in the winter months. We must conclude therefore, as Bernhardt (3) has

suggested, that though exposure may precipitate an attack, the real cause lies in the lessened power of resistance of the individual.

That one attack predisposes the individual to subsequent attacks, was a theory advanced by Eulenberg (21), who cited a case of a man who had three times had facial paralysis on the left side and twice on the right. Numerous such instances of recurrent attacks in the same person are to be found in the literature on the subject, but it seems more probable that the individual is anatomically predisposed, or has a low power of resistance to the toxic substance causing the attack, than that the first attack should predispose to later ones. It is probably this same predisposition, existing in other members of a family, which gives rise to the occurrence of several attacks in the same household as in the instance described by Arkwright (22), who reported three sisters and one brother being afflicted with facial paralysis at the ages of 16, 16, 17 and 26.

It is not my intention to deal in detail with the recurrent and diplegic cases, for this aspect of the disease has been too well worked out and reported by others, notably by Bernhardt in 1899, and more recently by (Émile Paul) Petit (23). He has made an analysis of the previously reported cases of recurrent facial palsy and adds twelve of his own, observed at the Charcot Clinic at the Salpêtrière. These cases are all carefully studied regarding the severity of secondary and tertiary attacks, the periods elapsing between attacks and the prognosis of such seizures. Petit estimates that six per cent. of all cases of facial paralysis have a recurrence. In my series 2.7 per cent. suffered a recurrence. Eight of these gave a history of one previous attack and one was suffering from his third seizure when seen.

However great may be the rôle played by infection and toxic substances in the causation of facial paralysis, it seems probable that the age of the individual, at the time of the onset of the disease, directly influences the severity of the attack. The following table illustrates the age at which the severe and mild attacks have affected the cases which we are studying. Unfortunately the failure to give the electrical reactions in some of the records makes it possible to record only 282 cases in this tabulation:

	187 Severe Cases.	95 Mild Cases.
0 to 10 years.....	6 per cent.	3 per cent.
10 to 20 years.....	10 per cent.	20 per cent.
20 to 30 years.....	31 per cent.	36 per cent.
30 to 40 years.....	19 per cent.	27 per cent.
40 to 50 years.....	17 per cent.	6 per cent.
50 to 60 years.....	12 per cent.	4 per cent.
60 to 70 years.....	3 per cent.	2 per cent.
70 to 80 years.....	2 per cent.	2 per cent.

Of course statistics of most diseases show that the percentage of those from sixty to eighty years of age affected is relatively low. But the greater per cent. of severe attacks between the ages of forty and sixty, as compared with the milder form of the disease, seems sufficiently striking to be significant. Is it not probable that the resistance of the organism to this disease, already low in those affected, is further diminished by advancing years?

The relation of the initial pain and the premonitory herpes to the facial paralysis has for many years been discussed, but no satisfactory explanation has been offered for their occurrence until 1906, when Hunt (24) read his paper before this society on "Herpetic Inflammations of the Genuiculate Ganglion." The part played by the geniculate ganglion and sensory fibers of the facial nerve, described by him, must be accepted, and it is only in considering the question of prognosis that I wish to refer to the severe pain, which so often precedes or ushers in an attack of paralysis. Is the initial pain of any prognostic value in determining whether the motor paralysis is to be of a mild or severe type? Eulenburg was of the opinion that the intensity of the pain may be an indication of the severity of the paralysis to follow, a view with which Moebius (25) coincided. Testaz (27), in a thesis entitled "Paralysie douloureuse de la septième paire," expressed himself as believing that the pain was of direct prognostic value in determining the severity of the attack. Bernhardt (3), however, called attention to the fact that pain may be absent in the severe form of facial paralysis, while it may be a prominent symptom in the early stages of a light attack. Menke (26), from a study of 105 collected cases, also made this observation, while Hübschman (4) in 1894 found that in his series of cases there was a history of pain only once in the sixteen severe cases, four times in the thirty-one cases of medium severity and six times in the thirty-three light attacks.

It has so frequently been my experience to see severe pain in the ear or mastoid region, followed by a mild attack of facial paralysis, that I have been interested to record the location and character of the pain in most of the cases I have observed. In 187 cases, showing a complete or partial reaction of degeneration of the affected nerve, 56 gave a history of pain at the onset, while of 96 patients, who showed no change in the faradic irritability of the nerve, or a very slight decrease, and who recovered in from two to six weeks, 39 complained of aural or mastoid pain. On the whole, the pain experienced by those afflicted with the milder attacks has seemed quite as severe as that found in the severer cases, and in a number of instances has been sufficient to cause a series of sleepless nights.

The severity of the pain which may be experienced in facial paralysis, associated with herpes, is well illustrated by the following case. A woman, forty years of age, had suffered from a severe form of *tic douloureux* of the left face for several years. After having tried various forms of palliative treatment, an operation was decided upon. This was done by Dr. S. J. Mixer, who cut the second and third divisions of the trifacial nerve before they entered their respective foramina at the base of the skull, and plugged the foramina rotundum and ovale with amalgam, to prevent reunion. A good recovery was made from the operation and the patient spent a few weeks of comfort, when she began to have a return of paroxysms of pain. The pain now, however, was not in the malar and naso-labial region, but in the ear, and streaming down the jaw and into the neck. This pain increased and was so severe that the patient demanded another operation, being unable to sleep or eat on account of her suffering. Accordingly a second operation was performed, which showed that the third division of the fifth nerve actually had been divided, as the surgeon had claimed, and it was believed that the only means of obtaining a cure would be by division of the sensory root. This was not done, however, and three days later the patient was afflicted with a left-sided facial paralysis and a crop of herpetic clumps over the neck and left shoulder. It seems probable therefore that the pain the patient suffered before her second operation was due, not to trifacial neuralgia, but to an inflammatory process of her geniculate and cervical ganglia. She repeatedly described it, however, as being quite as severe as the old trifacial pain, though of a different quality.

In determining whether or not a continued course of treatment by galvanism, in cases of facial paralysis, presenting a reaction of degeneration, tends to the development of contracture, one is confronted with the difficulty of finding a standard, expressive of the degree of contracture, one wishes to describe. In classifying the results of treatment of such cases, I have made use of the term "marked," to indicate those cases with marked facial disfigurement as a result of the secondary contracture; "moderate," to indicate those in which the contracture is not absolutely disfiguring, but yet is apparent to the casual observation of an untrained eye; "slight," to denote those cases in which only a little accentuation of the lines of expression on the affected side can be detected.

In studying the relationship between treatment by galvanism and subsequent contracture, I have not included those cases presenting a partial degenerative reaction, since the degree of damage to nerve structure in these cases varies within wide limits. By making use of only the cases in which a complete R. D. was obtained, we are dealing with a degenerated nerve in all cases and can more fairly compare results.

In 49 cases of this class observed over two years after the onset of the paralysis, 28 had been through a four to eight months' treatment by galvanism, and of these 5 showed marked contracture, 6 moderate and 17 slight or none. Of the 21 patients who had not had galvanic treatment, 4 showed marked contracture, 10 moderate and 8 slight or none. From contrasting these two groups, it seems apparent that the administration of galvanism certainly plays no part in the causation of hemispasm secondary to facial paralysis. Whether or not the age of the patient has any bearing on the degree of contracture resulting is difficult to determine. Three of the patients included in the foregoing classification were under ten years of age and showed barely detectable contracture. On the other hand, there seems to be no more liability to severe hemispasm in those advanced in years than in the middle aged. Of course the degree of contraction has no direct bearing on the amount of motility regained for cases with only slight contracture, when the features are at rest, may show a marked impairment of motion.

Whether the secondary contracture of facial paralysis is due to a change in the muscle or in the nerve, is a point on which



there is some variance of opinion. Hitzig believed the cause to be in the altered nerve cells in the nucleus and he has been supported in his view by Gowers (1). Purves Stewart (28) suggests that the real cause may be found in the incomplete regeneration of the affected muscle fibers. He bases his opinion on the work of Ioteyko (29), who holds that there exists in normal muscle two functionally distinct elements, viz., a fibrillar structure, which is irritable to faradism, and contracts with a quick twitch and sarcoplasm, which is less excitable and contracts slowly. This latter substance is in a constant state of semi-contraction, and maintains the normal tonicity of the muscle. Voluntary muscular movement is the result of a sort of a tetanus of fibrillary contractions, with an accentuation of the contraction of the sarcoplasm. When the muscle degenerates, the fibrillar substance is lost, hence the absence of faradic irritability of the muscle and the slow response to galvanism. If the regeneration is incomplete, the highly differentiated fibrillar substance is imperfectly reproduced and the sarcoplasm, being superabundant, keeps the muscle in a state of exaggerated tonus through the constant stimuli through the regenerated nerve. This explains why, when no regeneration of the nerve takes place, we have no appearance of contractures.

André Thomas, however, explains the development of secondary contracture as being a direct result of impulses, sent to the muscle through the irritation of the neuroma of the trunk of the nerve, which is formed in the process of irritation. He found in the pathological examination of a nerve taken from a patient who showed muscular contracture, as a result of previous facial paralysis, that above the geniculate ganglion was an area of variegated fibers. Some were hypertrophied and some very fine. At times several fine ones seemed within the same myeline sheath, and at times they appeared to bifurcate and give rise to many fibers. He suggests that the contracture may be due to pressure caused by this neuroma-like growth in the canal.

Such a condition as that described by André Thomas may not only explain the facial hemispasm following severe forms of facial paralysis, but it may also account for the associated movements, according to the theory of Lipschitz (30). He believes that in the process of regeneration the new axis cylinders may grow into different branches of the nerve, so that cells in the

facial nucleus formerly innervating certain muscles may, through this change, come to supply all three branches of the nerve. According to the findings of André Thomas, it does not seem improbable that not only may an axis cylinder find a new destination, but that single axis cylinders may bifurcate to supply different muscles.

The temptation is strong, in going over such a series as we have been considering, to describe interesting phases of isolated cases, but my intention has been to adhere to the general questions considered here and to leave the details for another time.

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# THE COURSE OF SENSORY IMPULSES IN THE SPINAL CORD<sup>1</sup>

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Dissociation of sensation occurs in cerebral affections and also in affections of peripheral nerves, but most commonly from affections of the spinal cord. The extent of this last dissociation of sensation is topographically similar to that of complete anesthesia from spinal lesion. It has been described as produced by trauma to the spinal cord, syringomyelia, pachymeningitis (Herzen (1)); traumatic hematomyelia (Minor (2), Bergman (3)); tumor of the cord (Bruns (4) and Schlesinger (5), Cushing (6)); gumma (Lahr (7), Hanot (8)); glioma (Henneberg (9)); spinal syphilis (Brissaud (10)); compression of the cord (Edsall (11), Marinesco (12), Vines (13)); myelitis (Pick (14)); and various other spinal diseases and injuries. It will be seen that the dissociation occurs in widely varied conditions and probably depends on the part of the spinal cord affected rather than on the nature of the process.

At the present day it is generally conceded that various forms of sensation are conveyed upward in the spinal cord by systems of fibers which take their course in different portions of the cord. This view, first announced by Van Gehuchten (15) in 1893, according to his own statement, was at first thought to be true only for fibers conveying sensation of pain and temperature. Since then it has been found possible to separate the course in the spinal cord of other forms of sensation.

This theory superseded the old idea that the losses of different forms of sensation were due to different degrees of destruction of the same fiber tracts, and is also better supported by the clinical and pathological evidence than the hypotheses of those who assert that all forms of sensation are carried interchange-

<sup>1</sup>Read at the thirty-fourth annual meeting of the American Neurological Association, May 20, 21 and 22, 1908.

ably by the same fibers within the spinal cord, and that their different qualities are due to their different effects on the patient's mind.

The literature on the subject of the course of the sensory impulses in the spinal cord is very extensive. Long bibliographies are appended to the papers of Piltz (16), Henneberg, and Head (17). Head takes up the subject from a somewhat different aspect than the others, being chiefly concerned with the purely physiological side. As he says, the cases which have been carefully and accurately studied clinically and also anatomically are very rare. He had post-mortem examination in only two of his cases and in these the changes which evidently occurred shortly before death (hemorrhage, etc.) throw some doubt on the relation of the symptoms to the lesion found.

It is hardly necessary to review herein all the theories that have been held by the numerous writers as to the course of the sensory impulses in the spinal cord. I shall present only my conclusions as to the position and relations of these fiber systems in the spinal cord drawn from a study of the literature and also a number of cases in the Hospital of the University of Michigan, in which there was a dissociation of the various forms of sensation due to lesion within the spinal cord. The case histories presented and pathological findings are abstracted to that part which bears directly on the question in hand.

The fibers conveying sense of pain enter the posterior horn from the posterior root and ascend in the gray matter for a variable distance which probably depends on the level in the cord, and which varies from two to eight segments, since in cases of unilateral lesion of the cord with autopsy the lesion is usually found to be a constant distance above the limits of the analgesia of the contralateral side; this distance depending partly on the level of the cord affected and partly on the depth of the lesion; those extending into the gray matter cause the analgesia to extend higher. Pétren, after an analysis of one hundred and seventy-five cases, comes to nearly the same conclusion. The fibers may be interrupted by ganglion cells in the posterior horns. They cross to the contralateral side of the cord and ascend in the column of Gowers, part going to the cerebrum, either directly or indirectly and conveying a conscious perception of pain, and part to the other terminations of Gowers tract, the cerebellum, inferior olive, etc., for the establishment of the pain reflexes.

All of the above conclusion is supported by numerous cases in the literature, except the last part which is a hypothesis based on the anatomical descriptions of the course of the tract of Gowers in combination with the well-known physiological response to pain stimuli. It is often observed that in analgesia from cerebral affection the patient reacts to certain stimuli as if painful, though he says he feels no pain. The cases of Thos. J.; Harry G. from negative standpoint; Ada J.; and Ina W. bear out the above conclusion.

Fibers conveying sensations of heat and cold enter the spinal cord from the posterior roots and follow much the same course as those conveying pain sensation, from which, however, they are distinct and separate. This conclusion is based on the observations that while pain sense is usually lost in the same area as temperature sense from spinal lesion, it is not invariably so. In a number of cases in the literature the upper limit of lost temperature sense from traumatic lesion of the spinal cord does not correspond with the upper limit of analgesia (case of Chas. S.). In some cases of Brown-Séquard paralysis with lost pain and temperature senses the one returns while the other does not (Ada J.) or is lost while the other is not. Finally, sense of cold may be lost while sense of warmth is retained as in Mai's (18) case, or the reverse may occur as in my case (Thos. J.), thus apparently indicating that there are separate fibers for each of these sensations. It would seem probable that the system of fibers conveying temperature sense is more widely separated from that conveying pain sense in the cervical region of the cord and in the medulla than in the lower levels of the cord, as the cases of this form of dissociation are more frequently reported from injury or lesion at these levels (Raymond and Lajonne (19), and others).

Tactile sensation enters the spinal cord by the posterior roots and is conveyed upward in the posterior column on the same side at first, though it probably decussates higher up, as shown by Head's cases. From the fact that pain and temperature senses are quite frequently lost in spinal cord lesions when touch is not affected, it seems probable that there is a considerable separation of these fiber systems (Ada J. and other cases). I infer that touch sensation ascends in the cord without immediate decussation because of the well-known dissociation of sensation in syringomyelia. In my own series of cases, in those in which

there was no anesthesia there was no degeneration of the posterior columns (Thos. J.), and in those in which there was anesthesia there was degeneration in the posterior columns (Margaret B., combined to some extent; and Harry G., tactile anesthesia without analgesia), and this leads me to believe that the posterior columns chiefly, if not alone, convey tactile impressions. Cases reported in the literature confirm this conclusion, notably that of Meyer (20), in which there was a transverse myelitis involving all parts of the cord except the dorsal two thirds of the posterior columns and in which there was complete analgesia and thermanesthesia from the sixth rib on the right and fifth rib on the left on down the body, and in which there was no anesthesia, tactile sense was everywhere preserved.

Sense of position is probably a sensation coming from joints; sense of motion comes from muscles (Case of Chas. S.). In normal individuals probably both position and motion are recognized by the aid of sensations from both sources. Fibers enter the posterior root and the posterior horn and run to the cells in Clarke's column or that vicinity; possibly ascend in the gray matter of the same side for a variable number of segments, depending on the level in the cord; and then continue their course upward in the direct cerebellar tract of the same side. It is possible also that sense of position is conveyed upward partly in the posterior columns, which is a time-honored view based largely, I think, on the loss of the sense of position of the lower extremities which occurs in tabes. Since in tabes, however, the primary trouble appears to be in the posterior roots and ganglia, it is not a fair inference. Ataxia does not occur markedly even when the posterior columns are considerably diseased (Harry G.). That the impulses conveying the sense of motion and position pass upward on the same side of the spinal cord as that in which they enter is abundantly proved by the number of cases of Brown-Séquard paralysis on record in which this sensory loss is on the same side as the paralysis below the lesion (case of Ada J.; also case of Jolly (21) and Eskridge and Rogers (22)).

Case 1.<sup>1a</sup> Ada J., a school girl, aged seventeen years, was admitted to my service in the University Hospital on November

<sup>1a</sup> Sensation to touch was tested by light strokes with the finger; sensation for pain, by pin pricks; sensation for heat and cold, by the application of test-tubes filled with water at a temperature of approximately 50° and 0° Centigrade.

3, 1907, complaining of numbness of the left leg and an inability to move the right leg. Her family history was negative, as was also her previous medical history. She began menstruating at the age of fifteen years and it was regular and painless. She had been menstruating for one day when her present trouble came on and then it stopped. Eight days previous to her admission to the hospital she went to bed feeling perfectly well; at 4 A. M. the next morning she awoke with a severe pain of a drawing character in the epigastrium. She came downstairs to get a drink of water, then returned to her bed and to sleep, so there was evidently no weakness or ataxia at that time. This pain was present, but not severe in the morning when she arose at the regular hour. Her legs felt weak, but she walked about until noon, when she lay down because her left leg felt numb, and an hour later she found that she could not move her right leg and could not sit up, and she also had some pain in the thoracic region of the spine. Her condition had remained about the same up to the time of her admission to the hospital.

Physical examination on admission showed: height five feet seven inches, weight one hundred and twenty-five pounds. Nutrition good, cheeks slightly flushed, vaccination scar on the left arm. The examination of her heart and lungs was entirely negative. The liver and spleen were not enlarged or tender. The abdomen was negative.

On examination it was found that her visual form field was not contracted. Her pupils were equal, somewhat dilated and reacted promptly to light and in accommodation. The extra-ocular movements were normal and there was no nystagmus or diplopia. The senses of smell and taste were normal. There was no paralysis in the distribution of the fifth or seventh cranial nerves. She felt touch and pinpoint normally on both sides of the face, on both sides of the upper chest and over both arms, and there was no disturbance of the temperature sense or of the sense of position in these regions. The tongue protruded straight and there was no tremor or atrophy. The pharyngeal reflex was present on both sides. The movements of the neck were of normal strength and there was no rigidity of the neck. All movements of the shoulders, elbows, wrists and fingers were strong and equal on each side. There was no intention tremor or ataxia of the hands. She felt pinpoint better on the skin than on the nipple and touch better on the nipple than on the surrounding skin (Graves' stigma of hysteria was absent). She could not move the right leg at any part and could draw up the pelvis on the right side only slightly. She could elevate the left leg from the bed, but not with much strength, as the weakness of the other leg provided no support. She could flex and extend the knee, ankle and toes on the left side freely and with strength. There was normal tactile sensibility over both legs and the abdo-

men. Pain sense was lost in the left leg and the left side of the abdomen up to about two inches below the level of the umbilicus. On the outside of the thigh the loss of pain sense extended up to about two inches above the crest of the ilium. On the right side of the abdomen there was a zone of lost pain sense extending from about two inches below the umbilicus up to the level of the ensiform cartilage. These areas of lost pain sense were extended around the back to the spine with the gradual sloping of the line upward, as is seen in these cases of anesthesia from spinal lesion. Temperature sense both to heat and cold was completely lost in the left leg and up to the level of the umbilicus, and it was also lost in a zone about the right side of the body extending from the level of the umbilicus to the level of the ensiform cartilage. There was a loss of the sense of position of the toes, ankle and knee on the right side, but no loss of sense of position in the corresponding joints of the left leg. She could raise herself to a reclining posture on the left elbow, but not on the right. The spine was held somewhat rigid, but there was no deformity and no tenderness. The supraorbital reflexes were present. The biceps jerks were present and about equal on the two sides. The knee jerks were slightly diminished on both sides. The Achilles jerks were present. There was no ankle clonus on either side. There was a normal plantar reflex on the left side with a distinct Babinski reflex on the right side. The abdominal reflex was present on the left side, but absent on the right side.

The urine examination showed a specific gravity of 1025, reaction acid, and was negative for albumin, glucose, bile, acetone, and indican in pathological amount. There was a slight sediment, chiefly of oxalates.

The blood examination showed: hemoglobin 90-100 per cent. (Talquist); white blood cells 6400, red blood cells 6,020,000; the differential count of five hundred white blood cells showed: polynuclear 51.2 per cent., large lymphocytes 4 per cent., small lymphocytes 28.8 per cent., transitionals 7.6 per cent., eosinophiles 8.4 per cent.

The patient was placed in bed and given small doses of potassium iodid and on November 18 it was noted that she could move the toes of the right foot and could move the right ankle slightly. On November 25 it was noted that she could draw up the right leg on the abdomen and could extend it, but not with strength. The right leg was distinctly colder than the left to the touch and had a bluish appearance. The sense of position was still lost in the right knee, ankle and toes, and other sensations showed no change from the previous examination. The right knee jerk and Achilles jerk were exaggerated and there was an ankle clonus on the right side. The knee jerk and Achilles jerk on the left side were normal.

She gradually continued to improve, so that by December 16



she was walking about with only a slight limp on the right side. All movements of the right leg were weaker than those of the left leg. There was no atrophy anywhere in the arms or legs. The right knee jerk was exaggerated and showed a patellar clonus. The right Achilles jerk was exaggerated and showed an ankle clonus. Plantar irritation caused extension of all the toes when performed on the right side, flexion of all the toes on the left side. There was no loss of sense of position of the toes or ankle on either side. Sensation to touch was normal all over the arms, legs and body. The senses of pain and temperature were lost to much the same extent as at the first examination. In the areas of lost temperature sense she was unable to differentiate heat and cold ( $5^{\circ}$  and  $50^{\circ}$ ), and said that she felt both merely as touch. She left the hospital January 15, 1908, in much the same condition as at the examination December 16, 1907.

CASE 2. Chas. S., an engineer, aged forty-three years, was admitted to the University Hospital on December 11, 1907. Chief complaint: spinal injury. His family history and previous medical history were negative. On the evening previous he was in a railroad wreck and jumped from an engine, striking against a car. He was unconscious, but regained consciousness in a few minutes. He had some cuts about the head and face; was paralyzed and anesthetic from the chest down and had three fractured ribs on the right side. He complained of pain in the chest and complete retention of urine.

*Examination.*—Head was bandaged for various cuts. Had a cut over the bridge of the nose. The left eye was blackened and there was sub-conjunctival ecchymosis. The left palpebral fissure was narrower than the right, but he said this has been so since childhood. The left pupil was a trifle wider than the right. Both pupils reacted promptly to light and in accommodation. There was no ocular palsy. There was no facial paralysis. There was no palsy of the tongue. He felt touch and pinpoint equally well on each side of the face and neck. He did not rotate his head because he said it hurt the back of his neck, but there seemed to be no rigidity of the neck. All movements in both arms were apparently normal, well performed and strong. He did not raise his arms above his head because of the pain in the chest caused thereby. He felt touch and pinpoint equally well in each arm, and all over both arms. Distinguished heat and cold all over both arms. No loss of stereognostic sense. No loss of sense of position in the fingers. Sensation to light touch was normal on the left side down to the lower border of the third rib. At the left border of the sternum the line dipped down to about the level of the upper border of the fifth rib, where it crossed the sternum, rose slightly to the lower border of the fourth rib and followed the lower border of the fourth rib around the chest. Sense of pain to pinprick was normal on both sides

down to the upper border of the third rib in the mid-clavicular line and the line was directly horizontal around the chest. Sensation of differentiation between moderate degrees of heat and cold was lost below the same line as the pain sense. Below this line and down to the line of lost touch sensation both heat and cold were called warm. Deep pinprick was felt as touch, but without pain below the line of lost sensation for light touch for a variable distance of about 2 cm., shading off to total anesthesia. Respiration was slightly costal, but mostly diaphragmatic. He was unable to move his lower extremities in any part. They were not atrophied or contractured and the skin felt moist and warm. There was a total loss of sensation in the leg to touch, pinpoint, heat or cold and in the trunk up to lines above described. He did not know the position of his legs, thighs, feet or toes, whether they were flexed or extended; but he was able to tell the direction in which his ankle was being moved, whether flexed or extended. He was able to tell in which direction his toes were being moved. Pinching the muscle of the calf caused no pain, but produced the impression that his foot was being pulled down. The knee jerks were lost on both sides. The Achilles jerks were present and about normal on both sides. X-ray examination showed apparently a breaking off of the right articular facet and a portion of the body of the sixth dorsal vertebra.

December 16, 1907. Felt about the same. Had some rise in temperature. Upper sensory limits above are the same as in previous examination. All forms of sensation are lost in the legs, including sensation of movements and direction of movement in the ankle which had been present at the last examination.

His condition became worse, bed-sores developed, and he died two months later. A postmortem examination was not obtained.

CASE 3. Ina W., aged seventeen, was admitted to the University Hospital on November 15, 1907. Her family history and previous medical history were negative. Her present trouble began two years previous to admission, after falling from a tree. Patient said she did not remember anything that happened for about two weeks after the accident. Patient said that while in bed after the accident it was very painful to be moved, the pain being in the small of the back, and that she could feel nothing from the waist down, *i. e.*, from about the level of the anterior superior spine of ilium on down. She first sat up in bed about two months after the accident, though the sitting up hurt her back. The first movement in the leg was in the right—slight contraction of the quadriceps one month after the accident. Said her father had stated that about two days after the accident a black spot appeared at the left sacro-iliac junction; this sloughed to a deep, painless ulcer and healed in about three months. Said that she had some pain in the abdomen shortly after the accident; had no pain on admission in the abdomen or legs.

*Examination.*—Answered questions readily, but could not remember details of anything following the accident up to the time of admission to the hospital. Patient did not realize any defect in memory. Memory of very recent events fairly good. Intelligence was practically unimpaired. Slept fairly well. Appetite good. Bowels constipated. Had to strain before urinating; said that at first she had to be catheterized.

There was no paralysis of the face, tongue or extraocular muscles. Pupils reacted to light. Felt touch and pinpoint equally well in each side of the face. No anesthesia of the conjunctiva. Fingers felt cold and clammy. Grip of hands good. Felt touch and pinpoint equally well in each hand. There was no tremor of the hands. Could raise the right leg from the bed, but very weakly. Extension of the right thigh was also weak. Flexion of right knee was weak, extension somewhat stronger than flexion, but also weak. Could not flex or extend the ankle. Could not move the toes. The right leg was considerably wasted below the knee and slightly wasted above the knee. The skin of the right foot from the ankle down was a dusky red, covered with small spots of ecchymosis, especially on the toes, and also showed scars of similar spots. Said that she had a bedsore on the heel. Underneath the right ankle was a large scar which followed a burn; another about six inches around also followed a burn. In the right leg below the knee the patient felt touch only in a small spot about the size of a quarter beneath the internal malleolus and in another spot the size of a dollar on the inner surface of the right leg, the upper edge of which was six inches below the internal condyle. The anesthesia ended at the knee in a line drawn around the knee just above the border of the patella. Over the patella there was a depression in this line to take in that prominence. Sensation to pinpoint was lost entirely to a point midway between the patella and Poupert's ligament. The line sloped upward rapidly on each side from this point on both the inner and outer sides. Could draw up the left leg, but movement was weak. Could not extend the left leg. Could not move the left ankle at all or the left toes. She was anesthetic to touch in left leg below the knee except in a small spot corresponding to the spot on the right leg. The anesthesia extended above the knee to somewhat irregular line. Had lost sense of position of toes, ankles and knees on both sides. Biceps jerks were present on each side; knee jerks absent on each side; Achilles jerks absent on each side; plantar reflex absent on each side. There was lost temperature sense in the same region as the pain sense. No paralysis of rectus abdominis. There was some inframammary tenderness.

*Blood Examination.*—Good flow; watery appearance; red blood cells 4,780,000; white blood cells 7,650.

*Physical Examination.*—Inspection: Complexion good. Skin

dry. Respiratory movements same on both sides. Litten's shadow present. Angle of Louis not marked. Epigastric angle broad. Apex impulse not visible. Right clavicle more prominent than left. Palpation: Skin dry. Normal tactile fremitus. Expansion of lungs same on both sides. Apex impulse felt in fifth interspace just inside nipple line. Percussion: Apices 3 cm. above clavicle. Lungs gave normal vesicular resonance. Lung liver dullness sternal line sixth rib, nipple line sixth interspace, anterior axillary seventh interspace, mid-axillary seventh interspace. Heart: Upper border fourth rib; apex fifth interspace just inside the mid-clavicular line. Spleen eighth to tenth rib. Auscultation: Normal breath sounds. Voice sounds were increased in right apex. Heart sounds clearly heard all over left side of chest; they were clear cut and normal.

*Urine Examination.*—Quantity 125 c.c.; specific gravity 1.025; reaction acid; color light amber; albumin negative; glucose negative; bile negative; acetone negative; indican positive; sediment 1 cm. bladder cells, squamous epithelial cells, leucocytes, amorphous granules.

CASE 4. Marg. B., admitted November 30, 1904, died April 11, 1905, on the service of Dr. James Hendrie Lloyd at the Philadelphia General Hospital. Fracture of the lumbar vertebrae from jumping out of a window. The legs were paralyzed except for slight motion of the rotators of the right leg and a slight movement of the toes on the right side. Both knee jerks and both Achilles jerks were absent. Sensations for touch and pain were normal in the right leg except on the sole of the foot, where touch sensation was absent. "In the left side sensation for touch was entirely lost, as sensation for pain was lost except in small areas, upper and inner portion of the thigh." All forms of sensation were normal on the abdomen. "Sensation to heat and cold was normal in the right limb and the left thigh, below the knee they were lost." Condition remained the same up to time of death, which was apparently caused by acute nephritis.

*Pathologically.*—Sections from the second lumbar segment, just above the area of crushing of the cord, showed by the Weigert hematoxylin stain a diffuse degeneration of the posterior columns except the entrance root zone on the right side and the cornu-commissural zones. There was a degeneration in the lateral column along the periphery anteriorly on the right side. Sections from the thoracic and cervical regions showed degeneration in the columns of Goll about equal on each side. None elsewhere in the cord.

CASE 5. Thos. J. Summary: Fracture dislocation of the sixth cervical vertebra. There was a loss of power in the left leg with exaggerated knee jerks and Babinski. There was an analgesia and a loss of the power of distinguishing heat from cold in the entire right leg and in the right side up to the level

of the umbilicus. As there was a subjective sensation of coldness in the right leg, perhaps there was more loss of the heat sense than of the cold, the reverse of Mai's case. There was no loss of tactile sensation in either leg. There was some circumscribed anesthesia in the left hand which suggested direct involvement of a nerve root. Pathologically there was found on the left side of the spinal cord an area of degeneration above the lesion in the direct cerebellar tract and in the tract of Gowers and below the point of compression in the crossed pyramidal tract with a slight retrograde degeneration in the tract of Gowers and the direct cerebellar tract.

Thos. J., a carpenter, aged fifty-seven, was admitted to the Philadelphia General Hospital, September 14, 1883. His family history was negative. He had had the ordinary diseases of childhood and had been much troubled with malaria. He stated on admission that he had always had a weak back and that at intervals he had been laid up in bed for two or three days with great lumbar pain. He denied venereal history and intemperance.

*Present Illness.*—In July, 1882, while walking along the street, he was struck in the back between the shoulders by a heavy bale of rags thrown from a third story window. He was knocked to the ground and was unable to rise without assistance. Following this he had a sensation of numbness and tingling which gradually extended to the forearm and lower extremities and at the same time there was loss of power in the muscles at the back of the neck, it being impossible for the patient to hold his head erect. After this accident the patient staid in a Philadelphia hospital five weeks. All four limbs were paralyzed, but he gradually recovered the use of them. It was also noticed during the summer that he had girdle pain and swelling of the abdomen. In September he noticed that he was losing power in the left leg. This gradually grew worse until March, 1883, when he was no longer able to walk. He was confined to bed until May, 1883. At the same time he noticed an area of coldness developing quite acutely in the right side, which sensation was continued until March.

May, 1883, he could walk unaided, but the left foot dragged and the left knee gave way with him at any slight inequality in the pavement or in going downstairs. On his admission to the Philadelphia Hospital in September, 1883, he was able to walk only a little and with the aid of a chair. At that time there was some sensation of constriction about the waist and sensory disturbances in the right leg. There was no loss of motion in the right leg, but over the entire extremity, and extending to the umbilicus over the anterior abdominal wall of the same side there was complete analgesia. The patellar reflexes were exaggerated on the left side, but diminished on the right side. Ankle clonus

could be elicited on the left side, but not on the right. Along the radial border of the left hand and thumb there was a feeling of numbness and sensation was much altered. There was a slight curvature of the spine.

September 4, 1889, it was noticed that the fourth and fifth dorsal spinous processes were very prominent.

October 3, 1889, notes were made by Dr. Chas. K. Mills as follows: There was some loss of power in both upper extremities, but much more marked in the left than in the right. He was examined as to the movements of the arms, hands and fingers. He could perform all movements of the upper extremities, but with slowness and feebleness. If there was any difference this feebleness was more marked near the distal portion of the extremities, especially the little finger having the least strength. There was no anesthesia of the right or left arm or the chest. The patient complained of a feeling of numbness and of painful sensation in the left thumb and thenar eminence. The area of this sensation was linear along the radial border of the thumb, somewhat more at its palmar surface. Continuous with this area there was sometimes a sensation of numbness or deadness running across the wrist and up the forearm. Questioning more closely it was determined as follows: There was an area of total anesthesia and analgesia, somewhat irregular, at the extremity of palmar surface of the left thumb which reached the radial side just within the root of the nail occupying the entire border of the palmar surface of the tip of the thumb. Continuous with this there was an area of partial, but well-marked, anesthesia reaching as far as the carpo-metacarpal articulation of the radial border of the thumb slightly funnel-shaped, the wide end of the funnel being toward the forearm; the greatest breadth was three-fourths inches, the least, about one quarter of an inch. Bordering this area of partial anesthesia was an area of paresthesia, which the man described as the seat of sensation and coldness and cutting pain. In cold, sharp air it felt as if the part were laid open with a knife. He could not stand without support. The dynamometer read on the right side 45, on the left side 30. The knee jerks were plus on the left side, but diminished on the right. Ankle clonus was marked on the left, but not present on the right. Pupils reacted to light and on accommodation. There was perfect control of the sphincters.

November 28, 1889, notes made by Dr. Dercum: Left leg and thigh smaller than the right, and the left foot is in a position of talipes equinus. Right foot and right leg feel colder than the left. The knee jerks are diminished on the left side and absent on the right. Right plantar reflex—all the toes are hyperextended dorsally. On the left side the toes are flexed. On the left side ankle clonus is persistent. From the crest of the ilium

all the way down and from the perineum all the way down the right leg he is unable to distinguish heat and cold. Same is found true in the right gluteal region posteriorly. There is confusion of heat and cold on right lower quadrant of abdomen. Left side is normal. Tactile sensation is normal on both sides. Muscle sense is normal on both sides. Pain sense is duller on the right side from the crest of ilium down the leg and in the lower quadrant of abdomen and corresponds well with the loss of heat sense. Has occasional difficult micturition, water commences to flow quite suddenly and then stops short, accompanied by a burning sensation. Bowels sometimes constipated and again the opposite. Can abduct and adduct the left leg slowly and can bend it very slightly at the knee. Raises the left popliteal space two inches above the level of the bed. Cannot flex on thigh. Can hyperextend the left great toe when placed in its normal position. Can rotate the left leg slightly, but slowly. Can abduct and adduct the right leg better than the left and can flex thigh on abdomen and the leg on the thigh quite well. Can flex the foot on the leg only slightly. Diagnosis: Brown-Séquard paralysis.

November 27, 1903. By Dr. Gordon: Grip: marked limitation of movements in joints of both upper extremities, but impaired on the left more than on the right. Inspection: marked scoliosis towards left, especially in the dorsal region. Lower part of thorax on left side is very prominent. Lower dorsal and upper lumbar much deviated to the left. Marked atrophy of supra- and infra-spinati muscles and in supra- and infra-clavicular region. Musculature of both shoulders atrophied. Small muscles of hand much atrophied. Lower cervical vertebræ are very prominent. All reflexes of the upper extremities are exaggerated. Von Bechterew's reflex is diminished on the left and normal on the right. Lower extremities: is unable to walk or stand. Can, however, flex thigh on right. Can stretch out leg better on right. Knee jerk exaggerated on left, diminished on right. No ankle clonus. Babinski present on the left and not on the right. Rigidity present on both sides. Marked contraction with deformity more marked on the left. Musculature flabby and wasted on both sides. Sensation to touch and pain lost on the right leg, preserved on the left without delay.

At autopsy there was found: The spinal dura adherent posteriorly to bodies of the vertebræ at the third and fourth cervical vertebræ. There was a right angle at this point and the cord here was very much flattened. There was some lateral curvature of the spine in the lumbar region, but no deformity in the bodies of the vertebræ.

*Pathological Examination.*—The brain and spinal cord were removed and preserved in Müller's fluid for further examination, pieces being taken from paracentral lobules and from the

spinal cord and hardened in alcohol for study by the Nissl method. Grossly, the convexity of the brain appeared normal and the meninges were not thickened. There was no marked congestion and convolutions were about normal in size and position. The base of the brain appeared to be normal. Horizontal sections of the brain at regular distances of about one centimeter showed no area of softening within the brain or in the internal capsules or in the basal ganglia. Cross-section of the cerebral peduncles appeared normal, showed no degeneration when stained by the Weigert hematoxylin stain. Nerve cells in section stained by the thionin method appeared to be normal.

Microscopic section of the left paracentral lobule, stained by the hemalum-acid stain, appeared to be normal. There was no thickening of the meninges, no congestion of the blood vessels, nor perivascular infiltration. Sections of the right paracentral lobule, stained in the same way, appeared to be normal. The Betz cells on the left side appeared normal when stained by the thionin stain. On the right side those that were present appeared normal, but they seemed to be decidedly diminished in number.

Cross-section of the pons varolii, about eight mm. below the peduncles, showed an area of softening, probably recent, about two mm. in diameter, somewhat irregular in shape, on the right side and just below the median lemniscus. It involved a few of the most anterior small bundles of the right pyramid. Other portions of pyramidal tract appeared normal in the section. There was no degeneration elsewhere in the section, as seen by the Weigert hematoxylin method.

Cross-section of the pons varolii, at the level of the exit of the fifth cranial nerve, stained by the Weigert hematoxylin method, showed a slight degeneration in one of the most anterior bundles of the right pyramidal tract. Other parts of the section appeared normal.

Cross-section of the pons varolii, at the level of the exit of the fifth cranial nerve, stained by the hemalum-acid fuchsin method, showed no thickening of the meninges or any round cell infiltration. The blood vessel walls were not thickened. The perivascular lymph spaces were somewhat wider than normal. There was considerable congestion of the smaller blood vessels within the section; this was especially to be noticed in the gray matter in the floor of the fourth ventricle. In sections from this level, stained by the thionin method, nerve cells appeared to be normal.

Section of the right paracentral lobule, stained by hemalum-acid fuchsin, appeared similar to those on the left side except for the comparative absence of the Betz cells. Those that remained appeared normal in sections stained by the thionin method.

Sections of the right superior parietal convolution appeared



normal when stained by the hemalum-acid fuchsin and thionin methods.

Sections of the medulla oblongata, stained by the hemalum-acid fuchsin method, appeared to be normal. There was no thickening or infiltration of the meninges, or about the blood vessels within the section. Sections stained by the Weigert hematoxylin method showed no degeneration. The tractus spino-tectalis and tractus spino-cerebellaris were especially studied. The nerve cells of twelfth cranial nerve nucleus appeared normal in section stained by the thionin method.

Cross-section of the spinal cord at the level of the second cervical segment, stained by the Weigert hematoxylin method, showed a degeneration in the left lateral column situated along the periphery of the cord extending from the point laterally opposite the gelatinous substance of Rolando to the point laterally opposite the anterior extremity of the anterior horn, as a narrow band. There was no degeneration elsewhere in the cord. Section from the same level stained by the hemalum-acid fuchsin method showed no round cell infiltration in the meninges or about the blood vessels. There was a moderate amount of subpial neuroglia. Normal axis-cylinders appeared in all parts of the section except that referred to above as degenerated. The blood vessels in the pia and within the cord appeared normal. The spinal canal was closed by ependymal proliferation. Nerve cells of the anterior horn appeared normal in sections stained by thionin.

Cross-section of the spinal cord at the level of the fourth cervical segment, stained by Weigert hematoxylin method, showed degeneration in the same region as in those from the second cervical segment, and sections stained by hemalum-acid fuchsin method were similar to those of the second cervical segment. The anterior horn cells, stained by the thionin method, appeared normal.

Cross-sections of the spinal cord from the level of the eighth cervical segment, stained by the Weigert hematoxylin method, showed degeneration in the left lateral column extending from the posterior root along the periphery of the cord to the point opposite the anterior extremity of the anterior horn. Forward from this there was some slight degeneration about the periphery of the cord. The left anterior column showed marked degeneration in the median half. The degeneration in the lateral column was very marked and extended about half way from the periphery to the gray matter with the exception of the narrow band of fibers just beneath the pia. There was no degeneration in the sections stained by this method other than that described.

Sections from the same level, stained by the hemalum-acid fuchsin method, showed no thickening of the pia, no infiltration. The ependyma of the central canal was proliferated to the extent

of about three times the natural size of the spinal canal constituting the small ependymoma. Nerve cells of the anterior horns appeared normal.

Sections of the spinal cord at the level of the fifth dorsal segment showed degeneration in the left lateral column in an area corresponding to the crossed pyramidal tract. There was a degeneration of the left direct pyramidal tract. Sections from the same level, stained by the hemalum-acid fuchsin stain, showed changes similar to those described in cervical region except as to the location of the degeneration. The nerve cells appeared normal.

Cross-sections of the spinal cord from the level of the tenth thoracic and first lumbar segments, stained by the Weigert hematoxylin and hemalum-acid fuchsin methods, showed conditions similar to those in the sections from the fifth thoracic.

Cross-sections of the spinal cord at the level of the second lumbar segment, stained by the Weigert hematoxylin method, showed degeneration of the left crossed pyramidal tract. The region of the left direct pyramidal tract did not stain as deeply as the right. Sections stained by the hemalum-acid fuchsin method showed nothing pathological.

Cross-section of the spinal cord from the region of the third lumbar segment showed degeneration of the left lumbar column in the region of crossed pyramid tract, but no degeneration elsewhere in the section. Stained by the hemalum-acid fuchsin method, sections showed nothing worthy of note except a rather marked congestion of blood vessels, especially those in the anterior nerve roots. The nerve cells appeared normal in most instances, one or two showing displacement of the nuclei.

CASE 6. Harry G. Summary: Posterior and lateral column degeneration of the spinal cord. The posterior columns were extensively involved, the lateral columns only in the regions of the crossed pyramidal tracts. In the history it was noted that "touch is diminished or almost absent over the entire body, while pain sense is normal." "Ataxia is not marked."

Harry G., bricklayer, aged twenty-six years, was admitted to the Philadelphia Hospital, December 28, 1904, and died March 9, 1905, while on the service of Dr. Chas. W. Burr. His chief complaint was inability to walk and incontinence of urine and feces. The family history was negative. Previous medical history was negative. He had used alcohol and tobacco in excess, but denied syphilis. His wife had had several miscarriages. He had been exposed to all degrees of temperature. His present trouble began several months before his admission with difficulty in walking, which gradually increased, so that on admission the patient was unable to walk and had incontinence of urine and feces.

Examination showed a fairly well nourished man. No facial

palsy and no paralysis of the tongue. The pupils were myotic, right slightly larger than the left; the response to light was very slight; response to accommodation and convergence was normal. There was a slight ptosis on each side. Examination of the chest was negative. The heart was somewhat enlarged; there was no murmur. Abdomen was apparently normal. Resistance to passive movements of the arms only fair. The reflexes were normal on both sides. The grips in both hands were equal, but very weak. Ataxia not marked with eyes open, somewhat increased with eyes closed. Resistance to passive movements of the legs was poor. There was distinct contracture in lower extremities. The knee jerk was lost on the left side and almost absent on the right side. There was ankle clonus on either side. Irritation of the soles of the feet caused extension of the toes. Sensation to touch was almost absent over the entire body, while pain sense was normal. There was incontinence of feces and urine.

February 24, 1905, he was in bed for a week and was gradually losing strength. There was an abscess on the right leg which discharged several drams of pus daily. The biceps jerks and the knee jerks were increased on both sides. There was marked rigidity of all extremities on passive motion. Stroking the soles of the feet gave slight flexion of the lesser toes, but the great toe did not move. He developed a stuporous condition and died March 9, 1905. The pathological diagnosis was chronic pleurisy, chronic aortic endocarditis, caseous bronchitis, and chronic interstitial nephritis. The brain and spinal cord were preserved for microscopical examination.

*Pathological Examination.*—Sections of the spinal cord from the level of the third lumbar segment, stained by the Weigert hematoxylin method, showed an irregular area of degeneration, poorly defined, in each lateral column, not confined to the region of the crossed pyramidal tracts and considerably more extensive anteriorly than they, but it did not extend to the periphery of the cord; also degeneration in both posterior columns not involving the fibers immediately adjacent to the posterior median septum. It did not involve the corno-commissural zone or the peripheral fibers or the fibers adjacent to the posterior horn. The entrance root zone was normal. The columns of Lissauer were normal. The fibers within the gray matter were normal. The degenerative areas did not have the appearance of secondary degeneration. The nerve fibers had disappeared, leaving large holes, and in the center of these degenerated areas there were wide, thick trabeculae. Other parts than those noted as degenerated appeared normal. The pia was not thickened nor infiltrated. The blood vessels were not sclerosed. There appeared to be no swelling of the axis-cylinders in the parts of the cord not in the degenerated areas, but along the margins of the degen-

erated areas swollen axis-cylinders were frequently found. Close study of the holes in the degenerated areas made it appear that they were enormously swollen nerve fiber spaces. There was no infiltration about the blood vessels within the cord. The nerve cells of the anterior horn appeared normal.

Sections from the second lumbar segment, stained by the Weigert hematoxylin method, showed areas of degeneration in the same situations, but somewhat more extensive than in the third lumbar segment. There were also some holes in the anterior columns of both sides. The nerve fibers in Clarke's columns stained normally. There was no round cell infiltration of the pia. There was a slight thickening of the intima of the anterior spinal artery. It was noticed, especially in the anterior columns, that while swollen nerve fibers had dropped out, leaving large holes, many nerve fibers immediately adjacent to these holes appeared perfectly normal. The process was entirely equal on each side. The nerve cells, stained by the thionin method, appeared normal. This applied also to the cells of the inter-medio-lateral tract.

Sections from the mid-thoracic region showed degeneration in the same locality as in the lumbar region, but it was more extensive, involving practically all of the white matter posterior to a line drawn through the commissure except the fiber tracts along the periphery, and the entrance root zone. There were some holes in the anterior column of each side. The nature of the degeneration was the same as in the lumbar region. There was no evidence of inflammatory change in the meninges of the spinal cord.

Sections from the seventh cervical region showed degeneration of the same type and distribution as in the thoracic region. The center of the degenerated area at this level, however, contained much denser glia tissue. There was also more pronounced degeneration in both anterior columns. With the exception of the peculiar degeneration noted, the spinal cord appeared normal. The cells of the anterior horn appeared normal when stained by the thionin stain.

Sections from the first cervical segment showed degeneration in the region of the columns of Goll on both sides extending into the columns of Burdach posteriorly. This degenerated area was filled in the center with dense glia tissue. The entrance root zone was not affected. There was degeneration also in both lateral columns in the region of the crossed-pyramidal tracts, but it did not follow the outline of these tracts absolutely and extended to the periphery. There were also a few scattered holes in other parts of the lateral column. There was no degeneration in the anterior columns. Sections stained by the hemalum-acid fuchsin stain showed the above described degeneration and some hemorrhagic infiltration and thickening of the pia, but no round cell infiltration. The anterior horn cells were normal.

Sections from the lower medulla, stained by the Weigert hematoxylin method, showed degeneration in the posterior portion just postero-external to the nucleus gracilis. It had the same characteristics as the degeneration of the cord. There were also some of these holes in the white matter antero-external to the substance of Rolando. The descending root of the fifth nerve appeared normal. The pia was covered with blood on its external surface, the blood appearing to have formed either post mortem or immediately ante mortem. The cells of the nucleus gracilis appeared normal. Sections from the upper portion of the medulla, stained by the Weigert hematoxylin method, appeared to be entirely normal. There was no thickening of the intima of the anterior spinal artery.

Cross-sections of the right optic nerve showed some slight round cell infiltration of the pia, but appeared otherwise normal and showed no degeneration when stained by the Weigert hematoxylin method. In the cross-sections of the left optic nerve the round cell infiltration was not noted and there appeared to be no pathological change. Sections of the optic chiasm showed no pathological condition.

Cross-section of the right and the left third nerves appeared normal when stained by the Weigert hematoxylin and hemalum-fuchsin stains.

Sections of the right paracentral lobule showed hemorrhagic infiltration of the pia, but no inflammatory change, and were otherwise normal, as shown by the hemalum-acid fuchsin and Weigert hematoxylin stains. The nerve cells appeared entirely normal by the thionin stain. Sections of the left paracentral lobule showed the same conditions as the right.

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# Society Proceedings

## NEW YORK NEUROLOGICAL SOCIETY

October 6, 1908

The President, DR. B. SACHS, in the Chair

### THE SEAT OF CONSCIOUSNESS

By Frederick Peterson, M.D.

Consciousness, the speaker said, was a word in everybody's mouth. We used it glibly, as if we knew all about it. Psychologists, metaphysicians, physiologists and physicians had all written a great deal concerning it, but if they had said anything of any great significance, it had eluded his observation. The most tangible thing that he had been able to grasp in reading their works was that consciousness was a stream, a flow, a flight, a current, a thread, an "orderly succession of changes." He took it for granted that whatever consciousness might be, it had a seat. It was assumed that if the body be removed portion by portion, first the legs and the arms, and then the trunk as far as the base of the skull, that consciousness, if the circulation and oxygenation be kept up, still persisted in the head, and that its seat was in the brain. Such an experiment, in effect, had often been performed for us in broken necks and other spinal cord lesions. Those who had dared to surmise further had intimated that consciousness was diffused throughout the brain, or even that it was an attribute of the cortex of the brain alone.

With this preliminary statement, Dr. Petersen said, he would take a plunge at once into a subject that he knew as little about as anyone, not so much with the hope of establishing any new fact as for the purpose of provoking a discussion that might lead to some light in so much obscurity. In his opinion, the seat of that power which produced the manifestations of consciousness was in the basal ganglia (probably the corpora striata), and that consciousness was a peculiar summation of energy at that point, capable of being directed like the rays of a search-light into this or that portion of the brain.

In pointing out the lines of reasoning which had led him to this conclusion, the speaker first referred to the daily physiological variation of consciousness in the condition of sleep, which was certainly a reduction in consciousness from the highest summation of energies to some lower level. Sleeping and waking were to be observed in a vast group of animals that had little or no cerebral development. Furthermore, the phenomena of sleep were observed in newly born human infants, despite the fact that the cerebrum was quite empty of experiences and anatomically still much undeveloped as to its connections with the rest of the brain. They were also observed in children born without a cerebrum, and even in dogs deprived of their hemispheres. In innumerable cases of

extensive loss of cerebral substance, of a hemisphere, as in infantile cerebral palsies, a frontal lobe in the crow-bar case, etc., consciousness itself seemed unimpaired throughout life. These observations seemed to show that consciousness, at least as regarded its variations in the condition of sleep, did not reside in the cerebrum.

Another argument of a similar bearing was the fact that every individual with a brain stored full of all the experiences of a lifetime was only actually awake at any one time around some particular small group of functions or ideas that occupied consciousness at the moment.

Passing now to another series of pathological conditions, the one disorder which had led him to think much of this subject was epilepsy, in which disease loss of consciousness was the most extraordinary and often the only symptom. He alluded chiefly to such remarkable conditions as the *tic de salaam* and other forms of *petit mal*, in which the patient dropped suddenly to the floor with loss of consciousness, and quite as suddenly rose again in full possession of his faculties. The loss of consciousness was complete and often lasted but a fraction of a second. How could we account for such a phenomenon? If consciousness were a diffused attribute of the whole brain, what spasm of blood vessels or other physical process familiar to us could act and be readjusted with such speed?

The question now arose, what portion of the brain was so constructed as to be, apparently, in intimate connection with every other? The *corpora striata*. There was no part of the brain that we knew so little of. As Edinger said, here we had "a mighty portion of the brain that must be of enormous significance; otherwise it would not be always present, from the fish up to the man."

Mr. Henry Rutgers Marshall said that a few years ago it would have been a matter of surprise to find such a subject presented for discussion before a body of neurologists, as it would have been considered to belong more particularly to the field of psychology. The speaker thought the thesis presented by Dr. Peterson open to discussion, in that it attempted to describe consciousness in terms of energy. We had become more or less accustomed to similar descriptions since the appearance of Ostwald's work, in which he had attempted to define consciousness in terms of energy, but since the publication of that work, psychologists and philosophers had been endeavoring to bring meaning into his statements, but without success.

There was one interesting point, Mr. Marshall said, to which he desired to call attention. The word consciousness, as commonly employed, had two diverse meanings. For instance, when we referred to the consciousness of plants, of which Darwin had lately spoken, we referred to psychic existence, as such. When, on the other hand, we stated for instance that we had gone to the theater and met an old friend who so engrossed our attention that we were not conscious of the play, we used the word consciousness with an entirely different meaning. We here referred to a state of "awareness," and that was entirely different from "psychic existence, as such." When we spoke of the seat of consciousness we might mean either the seat of a psychic sense in man, or the seat of awareness. This latter was probably the form of consciousness to which Dr. Peterson referred. When we inquire as to the seat of consciousness as psychic existence, as such, we deal with quite a different question. The evidence at our command at present favored a very broad



and exceedingly general seat of consciousness, as thus considered. In the case of the epileptic, to whose sudden loss of consciousness Dr. Peterson referred, there was also a momentary paralysis—a sudden cessation of activities. That distinction was important, because it brought into relation with our states of clear consciousness all those states of what were commonly called our “sub-conscious” mental life; those states which might better be called “sub-attentive consciousness.”

Mr. Marshall said that under the view he held, waking and sleeping were objective signs of the same conditions which from another point of view were described respectively as clear consciousness and the lack of clear consciousness.

Professor Frederic S. Lee said that while Dr. Peterson had presented a very interesting idea, his paper gave rise to a considerable number of important questions. First, as to the nature of consciousness itself; whether, for example, it represented a special form of energy or not? The speaker thought that most physiologists would hardly agree with the idea that consciousness represented energy. It had seemed to him that the best working hypothesis for the physiologist was that consciousness was something of unknown nature which merely accompanied the activity of certain brain structures. He did not like the term “epiphenomenon” to express that idea, but since that was the common and accepted term, he would use it. Consciousness, then, was an epiphenomenon accompanying the activity of certain brain structures; or, rather, it was one of the modes of manifestation of their activity, just as chemical, thermal and electrical phenomena were other modes. Consciousness could not put into activity the brain structures. He would not necessarily confine consciousness to the activity of the cerebral cortex only, although he was inclined to believe that consciousness was more particularly associated with the working of cortical cells. Bechterew claimed that in early life, certain parts of the brain below the cortex acted consciously, and that as the tracts between these and the cortex became myelinated and functional, conscious activity came to be preëminently associated with cortical activity. He asked Dr. Peterson how, on the theory that the corpus striatum worked through the mediation of the cortex, he would interpret the behavior of one of Goltz's dogs, from which the cortex had been entirely removed.

Dr. Adolf Meyer said the thesis of Dr. Peterson brought back to us the proposition which Dr. P. Carus advanced about thirteen years ago in the *Journal of Comparative Neurology*, which was based largely on the argument that the corpora striata formed a large, bulky part of the brain to which at the present time no other function could be assigned. Gaule in turn assigned the function to the optic thalamus.

Ignoring entirely the question of what we meant by “consciousness” as a positive function, it seemed that the evidence that Dr. Peterson had brought forth could best be summed up as evidence of vulnerability of mechanisms of consciousness by a lesion in the basal region. It was evidence in favor of the possibility of localizing the lesions in some types of unconsciousness. As soon as we tried to make positive inferences, *i. e.*, as to the “seat of consciousness,” we were bound to meet quite a number of difficulties, and one of them was this: Contrary to Dr. Peterson's assumption, the corpora striata had relatively very obscure connection with the rest of the brain. This was one of the greatest stumbling-blocks to the theory advanced that the corpora striata should be of such fundamental importance. So far as we knew, its connections with the cortex

were extremely scanty, and with the rest of the base its connections were essentially those with the hypothalamus. On anatomical grounds alone it would be very difficult to explain any connection with the corpora striata and the "seat of consciousness," not to speak of the question whether the "seat of consciousness" could be a safe problem today.

Dr. Smith Ely Jelliffe said that in advancing a materialistic interpretation he felt like the metaphorical individual who rashly rushes in when others, who had preceded him, had tread so lightly. Could not consciousness be regarded solely as the sum of the sensory impulses received, and that it was, regarded from the viewpoint of its content, so far full or complete as the incoming sensory components were sufficiently tense and functionally operative. From this point of view any cutting off of sensory impulses cut out of full consciousness certain elements which, while such might not interfere with its practical integrity, yet made a theoretical subtraction. In alcoholic anesthesia one could see the process of the gradual lopping off of sensory components until the reduction had reached, little by little, such a grade as to result in what is usually termed unconsciousness. In this sense then it was impossible to consider the basal ganglia as the sole seat of consciousness, inasmuch as they contained neurone endings for a part only, and that very small, of the sensory system. Isolated abrogation of the function of the corpora striata was clinically uncorrelated as yet. Gas poisoning softening was a much more diffuse process than that suggested by Dr. Peterson. But the difficult feature of the whole problem still remained, *i. e.*, which element or elements in the sensory are stood in the foreground as of such primary importance as to perhaps permit of the use of the word "seat." One might lose one's consciousness of the position of the limbs from a lesion, either at Obersteiner's ring, in the cord, in the sensory stations of the midbrain or in the cortex. Where then could one say that limb-position consciousness had its seat? One might thus analyze one by one the components that are here assumed as constituents of a complex termed consciousness. The result would seem to follow that consciousness is a general correlate of sensory functioning and thus it has no necessary single seat, but is a function or sum of functions which has a diffuse anatomical substratum, from periphery to cortex.

## THE SERO-DIAGNOSIS OF SYPHILIS IN ITS RELATION TO NERVOUS DISEASE

### THE DEVELOPMENT AND CHARACTER OF THE WASSERMANN TEST

By C. F. Boldman, M.D.

After a brief review of Ehrlich's theory of antitoxin production and cytolysis, the speaker described the Wassermann test, which was now being extensively employed in the sero-diagnosis of syphilis. The Wassermann reaction, briefly outlined, was as follows:

Two tubes were prepared with the following contents:

Tube 1. Extract of the liver and spleen of a syphilitic fetus, representing the syphilitic organism (or antigen), plus serum to be tested.

Tube 2. Red blood cells of sheep or other animal, suspended in

normal saline solution, plus serum of a rabbit which has been immunized to the particular red blood cells used.

Complement (a substance necessary to all immune reactions, which existed in the fresh serum of all animals) in the shape of fresh normal guinea-pig serum, was now added to Tube 1 and allowed to stand. At the end of a half hour the contents of Tube 1 were added to that of Tube 2. If the serum in Tube 1 had come from a syphilitic individual, its relation to the extract of antigen was a specific one, and complement would be absorbed thereby; so that, when the contents of Tubes 1 and 2 were joined, no hemolysis of the red blood cells in Tube 2 would take place. If the serum was *not* from a syphilitic, complement would not be absorbed, but would remain active to cause hemolysis in Tube 2.

Hemolysis was observed in the test tube as a tinging of the whole field with a transparent red color. The red corpuscles had been disintegrated and the hemoglobin liberated. In the absence of hemolysis the solution of red cells remained turbulent and opaque.

The test, of course, involved numerous controls and a careful standardizing of the hemolytic serum and of the syphilitic extract.

#### THE TECHNIQUE OF THE WASSERMANN REACTION: ITS PRACTICAL APPLICATION WITH REFERENCE TO DIAGNOSIS, PROGNOSIS AND TREATMENT OF NERVOUS DISEASE

By E. Castelli, M.D.

After describing in detail the technique of the Wassermann reaction, the author offered the following conclusions:

1. From the social standpoint, the serum diagnosis of syphilis represented one of the greatest achievements attained by medicine at the present time. The role played by syphilis in the life of mankind required no explanation. The highest coefficient to degeneracy and insanity was created by syphilis.
2. If we were now in a position to tell our patient that notwithstanding his previous syphilitic infection he could marry and create a healthful progeny, we would certainly have at our command a tremendous factor for benefiting a large proportion of our fellow beings.
3. If we could establish the fact that syphilis was curable, and did not hang like the sword of Damocles over a man's physical and mental future, again would medicine have triumphed.
4. From a legal standpoint, the fact that we might be able to aid either the prosecution or the defense with the knowledge that the criminal had a claim on the court's leniency by reason of a previous syphilitic infection, which had produced a derangement of his mental poise, it might become an important factor in the administration of justice.
5. The sero-diagnosis of syphilis would be a means of differential diagnosis during the pre-paralytic stage, when the general symptoms were very indefinite and generally masked by a well-defined neurasthenic syndrome. The differential diagnosis between general paralysis and neurasthenia during this period would represent the real prophylactic warning. The patient, during this pre-paralytic stage, was already dangerous to himself, his family and to society at large, and our early recognition of his condition made possible the safe-guarding of the patient.

6. While the sero-diagnosis of syphilis in its present condition was not perfect, and owing to its complicated technique and to the difficulty of procuring the necessary ingredients it was limited to a few privileged students, yet it had the indisputable advantage of furnishing us with a rich amount of positive diagnostic data, and the speaker said he considered its adoption in the various hospitals and medical institutions not optional, but absolutely necessary.

## DEMONSTRATION OF WASSERMANN REACTION TEST

By Dr. Noguchi, of the Rockefeller Institute

After demonstrating the Wassermann reaction, Dr. Noguchi showed briefly a reaction evolved by him during some experimentation with the various albumin reactions in the spinal fluids of general paralysis and other disorders. This was obtained as follows: 0.1 c.c. of the spinal fluid to be tested is placed in a test-tube whose diameter is 1 cm. or less. To this is added 0.5 c.c. of a 10 per cent. solution of butyric acid. The tube is now heated until the fluid is bubbling, and while still hot 0.1 c.c. of a normal (4 per cent.) solution of sodium hydrate is added. In nearly all spinal fluids an opalescence or cloud occurs, but in the spinal fluid of general paralysis the cloud soon separates into a definite flocculence which is characteristic. The flocculence usually appears in a few moments—rarely requiring more than 20 minutes.

The reaction shown by Dr. Noguchi had the advantage of being positive in a quantity of 0.1 c.c. or less, and of being a qualitative as well as a quantitative test. What the flocculence might mean was not known, but it might consist of some globulin fraction which was found only in syphilitic or meta-syphilitic disorders of the nervous system. That the reaction was not entirely quantitative was shown by the fact that many fluids from non-paralytic cases gave much richer clouds than those from paresis, but the clouds did not flocculate.

Dr. J. W. Moore, of the State Pathological Institute, Ward's Island, said they had tested thus far 80 cases by the Noguchi method. Fifty undoubted cases of paresis gave 48 positive results. The two negative cases did not seem peculiar in any way. Of three cases of cerebral syphilis, two gave positive reactions. Of the non-paralytic cases tested, five were alcoholic psychoses, ten dementia præcox, four epileptic psychoses, two manic-depressive cases, one paranoic state, one imbecile and one case which was diagnosed as Karsakow's delirium, but which proved at autopsy to be due to a fractured skull with extensive diffuse dural hematoma. Only one of the non-paralytic cases gave a positive reaction. This was a case, diagnosed dementia præcox, which had, however, increased knee-jerks and speech defect. Five doubtful cases gave two positive results and three negative.

In the majority of cases of paresis, the Wassermann reaction was also carried out. Four cases of general paralysis which were negative to the Wassermann test were positive to the other. Four gave the Wassermann reaction much less definitely than did the Noguchi reaction. In no case was the Wassermann test the more conclusive of the two. In two of the cerebral syphilitic cases in which the Wassermann reaction was tried it gave a negative result.

Dr. B. Onuf said that Dr. Castelli had made the statement that in a large percentage of cases of general paresis—70 or 80—the Wassermann reaction was positive, and also in about 60 per cent. of cases of senile dementia. Could we conclude from that that senile dementia was simply a late form of general paresis? That syphilis produced a rather rapid exhaustion of the nervous system, while in senile dementia identical changes occurred in a longer course of time? Did he mean to identify senile dementia with general paresis?

Dr. Boleslaw Lapowski, discussing the Wassermann reaction, said that on account of its technique and the material and control experiments that it involved, it would always remain a laboratory test. By terming it the "Wassermann reaction" we were inadvertently doing an injury to others who laid the basis of the reaction. Wassermann simply substituted dissolved substances of bacterial extracts of organs instead of emulsions of bacteria, but the basis was the fact discovered by Bordet and Genou, and to them at least some credit was due.

The test was of undoubted value in corroborating or establishing the diagnosis of latent syphilis, but even then it could not always be relied upon, and in dealing with primary or secondary syphilis it was not necessary.

The president, Dr. Sachs, said that while the Wassermann test could not be done at the bedside, its technique was not difficult and could be easily acquired. For the present, of course, this test, as were many others, would be restricted to the laboratory and had to be made by persons who were specially qualified along those lines. Thus far, the reaction had been practically limited to cases of suspected tabes or general paresis, but at the Mt. Sinai Hospital an effort was being made to employ it in other doubtful spinal or cerebral cases where syphilis was suspected.

## PHILADELPHIA NEUROLOGICAL SOCIETY

October 23, 1908

The President, DR. J. W. McCONNELL, in the Chair

### TUMOR OF THE RIGHT INFERIOR PARIETAL LOBULE. OPERATION; PARTIAL REMOVAL; IMPROVEMENT

By F. X. Dercum, M.D.

T. G., age 39, single, laborer by occupation, was admitted to the Jefferson Hospital, May 12, 1908.

*Family History.*—Father died of an accident at 45 years of age. Mother died at 50 from tuberculosis. Two brothers and one sister died of tuberculosis.

*Personal History.*—Does not recall having had the usual diseases of childhood. Has always had good health with the exception of an occasional severe cold. Has used tobacco and liquor moderately. Had gonorrhea ten years ago; no syphilis.

*Present Illness.*—Three weeks before admission while working, he became suddenly very short of breath and dizzy and fell to the ground;

he was not unconscious, and immediately arose, but was so weak that he could not walk without assistance; he was short of breath for several minutes. He was obliged to go to bed, where he remained for several weeks because of general weakness. He also suffered from dull headache.

*Condition upon Admission.*—Complains of general weakness, of headache, of occasional attacks of dyspnea and of pain in the left side of the chest. He is fairly well developed and in a fair state of nutrition. There is some impairment of resonance over the right apex and anteriorly prolongation of expiration. There is also some prolongation of expiration over middle and lower lobes of right lung when many fine crepitant rales are heard.

*Examination of the Nervous System, May 27, 1908.*—Patient is quite weak. Has difficulty in standing upon either leg alone, but the left leg is distinctly weaker than the right. The grip in the left hand is somewhat weaker than in the right. The knee-jerks and tendo Achillis jerks are both slightly plus on both sides. There is no ankle clonus and no Babinski sign upon either side. Tendon reflexes of both arms are slightly plus. No inequality of tendon reflexes can be elicited. The left angle of mouth is slightly lower than the right and there is slight flattening of the left side of the face. The patient recognizes all objects promptly with the right hand; with the left hand he recognizes them with considerable difficulty and every now and then fails. In other words there is an incomplete astereognosis in the left hand. There is considerable mental hebetude and also dull headache.

The ophthalmoscopic examination made on the same day reveals marked choked discs. In the left eye there are two flame-like hemorrhages over the disc. There is present a neuro-retinitis. The veins are large and tortuous, the arteries are small and straight. The pupils are slightly irregular but react normally. The movements of the eyeballs present no anomalies save that they are tardy. There is also present a left lateral homonymous hemianopsia.

The diagnosis of tumor of the right inferior parietal lobule was made. The question of operation was considered and presented to the patient who, however, withheld his consent for the time.

Reëxamined on June 2, 1908, it is found that the right knee-jerk is more pronounced than the left and that the weakness in the left hand is a little more marked. Astereognosis also is now slightly more evident in the left hand.

Reëxamined June 7, the same symptoms are noted as before save that there is now a faint hypesthesia of the left side of the face, left side of the trunk and left upper extremity, especially the hand. Ankle clonus and Babinski are still absent. Headache is quite pronounced. Hebetude is marked; questions are answered very slowly.

Eyes reëxamined June 8, reveal double optic neuritis, more marked in the left eye. No hemorrhages or patches of exudation are noted in this examination. The veins are dilated and tortuous, arteries are contracted. An examination of the fields reveals a clearly marked left lateral hemianopsia with no apparent contracture of the periphery.

On June 11, 1908, the patient was operated upon by Dr. J. Chalmers Da Costa. A large osteoplastic flap was made over the right parietal region. The bone over the area was sclerotic and worm-eaten and was evidently the seat of old tuberculous caries. Bone, membranes and brain were fused together over an area the size of half a dollar. The dura

showed yellow tuberculous masses over both outer and inner surfaces. On attempting palpation, the finger broke into a softened area in the center of the mass which extended downward into the brain substance for about an inch. A portion of the mass was removed. An attempt was made to close the dura using fine silk sutures, iodoform gauze packing was inserted and the osteoplastic flap replaced.

The portion of tissue removed consisted of a grayish-white nodule which upon microscopical examination proved to be tuberculous.

Eyes reexamined June 18, 1908. An ophthalmoscopic examination made by Dr. Hansell revealed double optic neuritis, more marked in the left eye. Nerve head was but slightly swollen. Left eye still shows marked swelling of discs with hemorrhage. There is also some contraction of the peripheral field. Left lateral hemianopsia is still present. Contraction of periphery.

The subsequent history of the case was uneventful. By June 20 the wound was healed while the patient was in good general condition. He was discharged from the hospital on June 10.

The patient was reexamined on July 28, 1908. States that he suffers very little from headache. Mentally he is much clearer and much more alert. Walks normally but does not stand quite as well upon the left leg as upon the right. Grip of the left hand is still weaker than that of the right, the right hand registering 42 and the left hand 32 on the dynamometer. The left knee-jerk is somewhat plus; right knee-jerk normal. Left tendo Achillis jerk is also plus as compared with the right. There is no Babinski. The astereognosis formerly present in the left hand has almost disappeared but not entirely so. The hypesthesia has disappeared save over the left hand where it is still faintly present. Fields are still hemianopsic, though there is some contraction at the periphery.

The patient was readmitted to the Jefferson Hospital on October 8, 1908, suffering from marked general weakness. The examination revealed little change from the condition last noted save that the optic neuritis had subsided in both eyes but atrophic changes had become very evident. Contracture of the remaining visual field had also become very pronounced. There had been some recurrence of headache. The above case is interesting mainly as regards the question of localization. It resembles in this respect the case reported by Drs. Mills and Frazier at the last meeting of the American Neurological Association. The fact that the patient has tuberculosis, of course, makes the outlook unpromising. However, the improvement of symptoms following the operation, namely, the relief of headache, the subsidence of the neuritis, the cessation of the progress as regards the hemi-paresis, the practical disappearance of the hypesthesia and the improvement in the stereognosis of the left hand, fully justified the surgical interference, although the future will probably prove that the relief has been only temporary.

Dr. D. J. McCarthy said it had always been a question in his mind as to whether the function of astereognosis was a complex function composed of various sensory impressions and was localized to one or to both sides of the brain. Dr. Dercum's case would indicate that there is a center for astereognosis on the right side of the brain as well as on the left. It might be well to remember that multiple foci of tuberculosis are much more frequent than single foci. This does not refer absolutely or particularly to one type of tuberculous lesion, by which statement he means that it is not infrequent to find with a local tubercu-

lous lesion a subacute or a chronic form of leptomeningitis or pachymeningitis and not infrequently associated lesion of the spinal cord.

### NEURITIC FORM OF SYRINGOMYELIA

By Alfred Gordon, M.D.

A man of 29 whose occupation was carrying ice, five years ago fell. A few hours later he began to suffer pain in both arms. The pain continued two months. It was at first dull but continuous; soon sharp pain would come on. At times it was excruciating. At the end of two months it gradually subsided but dull aching remained. At that time the patient developed a gradual oncoming atrophy in the upper limbs. At present the atrophy is marked in the hands, arms, shoulders and scapular regions. The hands present the "main en griffe." Fibrillary contractions and reactions of degeneration are present. There is also some wasting in the lower extremities. The reflexes are all markedly increased. In the upper extremities there is a quite marked syringomyelic sensory dissociation; the same is observed in the scapular regions and upper part of the thorax. The arms are very tender. A slight grasping of the forearms and arms provokes pain. The old neuritis is evidently still present. The lower extremities are free from neuritic symptoms.

The case is analogous to the one reported by Guillain in 1901. He observed a patient whose history was reported first by Mme. Dejerine-Klumpke, and later by Dejerine; he found syringomyelic symptoms which gradually followed the ascending neuritis. Dr. Gordon's case is interesting from the etiological and diagnostic standpoints, the original trauma, subsequent neuritis and later syringomyelia. It is also interesting to note the existence of syringomyelia and neuritis at the present stage of the disease.

### A CASE OF ADENO LIPOMATOSIS

WITH SOME REMARKS ON THE DIFFERENTIAL DIAGNOSIS OF THE AFFECTION  
FROM ADIPOSIS DOLOROSA AND OTHER DISEASES

By Charles K. Mills, M.D.

The patient was a man 33 years of age, who was under examination and treatment in the wards for nervous diseases in the Hospital of the University of Pennsylvania. The patient has been a steady user of beer, and had a history of several attacks of articular rheumatism. About three and a half or four years before coming under observation he developed a small pendulous mass or swelling under the chin. This fatty swelling gradually enlarged and other masses of a similar description appeared in the mammary region, on the shoulders, the upper arm, the back, abdomen and thighs. The enlargements gradually extended and from at first having been more or less isolated, became somewhat diffused. The masses at the date of the exhibition of the patient were enormous, as indicated both by appearance and measurements. Examination of the patient's blood showed some anemia, not of pernicious type. The eyes were a little protuberant and a slight von Graefe's symptom was manifest,



the pulse varying, but often ranging from 90 to 100. No marked symptoms referable to the nervous system were present; but little pain on pressure in the upper arms, no mental depression, and only very moderate asthenia. The case was similar to a few others which have been reported, especially by French observers. Dr. Mills expressed the opinion that the case was not one of adiposis dolorosa, but asked for a discussion of the question. An account of the case with some discussion of adenolipomatosis will appear in the *University of Pennsylvania Medical Bulletin* for December, 1908.

Dr. W. B. Diefenderfer, Altoona, said the case had come under his care two years ago approximately, when the symptoms were less distinct. What he termed exophthalmia he thought had increased. He had noticed quite an increase in the bulging of the eyes in the last seven months, and had also watched the increase in the size of the arms and hips. He took measurements and found them entirely uniform. He stated that he had brought the case down to have a differentiation made between adiposis dolorosa and lipomatosis; that he had looked in all the recent books on skin diseases and had not been able to find any literature on lipomatosis.

Dr. F. X. Dercum said that the patient presented by Dr. Mills did not impress him as one of adiposis dolorosa. He lacked spontaneous pains as well as the painful tenderness which is present in adiposis dolorosa. Further, the majority of cases of adiposis dolorosa have occasional swellings coming on suddenly within the fat. These swellings have been compared in character to the tumefaction presented by a caked breast. The man presented by Dr. Mills lacked also the neurasthenic symptoms and the mental depression. The latter assumes in some cases the gravity of a veritable psychosis. Dr. Dercum thought the case of Dr. Mills an exceedingly interesting one and an evidence of the fact that we do not study lipomatosis sufficiently.

Dr. D. J. McCarthy said that he quite agreed with Dr. Dercum, from his study of adiposis dolorosa, that the case presented by Dr. Mills does not belong to that group. There is a pathological fat, as in some cases of neurasthenia. Whether it is directly associated with some abnormal condition of the ductless glands, which has been suggested as the cause for adiposis dolorosa, is open to question. This case, in one or two directions, resembles closely a case under observation at the Philadelphia Hospital for the last two or three years, in which the appearance of the neck and exophthalmia and other symptoms would indicate that it belonged to the same group. It was diagnosed as a case of Hodgkin's disease, because of the condition of the glands of the neck. Dr. McCarthy did not agree in this diagnosis. Necropsy showed a tumor of the thyroid gland with secondary growths scattered through the fat tissues. The growth was localized around the neck and in the mediastinum. The slight exophthalmos and von Graefe's sign, in Dr. Mill's case, would suggest that there was some disturbance of the thyroid gland. Dr. McCarthy stated that in two previous cases of adiposis dolorosa which he saw with Drs. Dercum and Burr; there were, in both, tumors of the pituitary body, also in one a lesion of the thyroid gland and a tumor of the ovary. In one case studied carefully, with Dr. Dercum, there was general disease of the lymphatic system. In one case he studied, the wife of a man suffering from general spinal syphilis, who was developing adiposis dolorosa, the condition described by Dr. Dercum, that of

a localized inflammatory condition in the fatty tissue, with distinct swelling and marked pain and tenderness was present. The painful tenderness in the fat would seem to be almost the distinguishing feature in *adiposis dolorosa*.

Dr. W. M. L. Coplin said that this was the second case of the kind coming under his observation. The first, during his service as a hospital interne, was operated on by Professor Samuel W. Gross; the patient had fifteen or twenty masses which contained distinct dense centers. There were large lobulated, multiple lipomata with central fibroid or fibro-calcareous masses, the smallest measuring 2 cm. or less, the largest 20 to 30 cm. in diameter; most of the masses were sessile, a few showed a tendency to pedunculation. The masses were marvelously symmetric, even when occupying the middle line of the back of the neck. One mass was as large as two fists, and symmetrically distributed between the two sides of the median line. Chantemesse and Podwysotsky have pictured a case, and other cases are referred to under the head of multiple symmetric adenolipomata. In the case there figured, the picture shows almost all the features that are seen in Dr. Mill's case and showing also lipomata in Scarpa's triangle. His impression was that the inferior extremities were also involved. The relation of this to the lymphoid cases and the lymphoid lipomatosis is still quite obscure, but the fact that many of these masses develop in definite lymphoid areas suggests that some of the collections of fat arise primarily in the hilum of or in connection with the lymph-nodes, and further that they might be in some way associated alterations in the lymph vessels. In venous and lymphatic obstruction multiple lipomata may develop, as along the free borders of the intestine and colon in cirrhosis of the liver; such masses may attain the size of an orange. Dr. Coplin said that he was present at a necropsy only a few days ago in which twenty or thirty masses were found along the free borders of the colon and of the intestine, and on operation they had been mistaken for definite neoplasms, they were lipomatic and it was possible that they may have arisen as a result of circulating disturbances in veins, lympho-chyle vessels, or in connection with the lymphoid structure of the intestinal tract. Of course many such masses could not be produced in the way indicated.

#### CASE OF PSEUDO-TABES DUE TO MULTIPLE NEURITIS WITH ANEMIA

By Chas. K. Mills, M.D.

M. S., male, white, unmarried, miner, aged 45 years, was admitted to the Philadelphia General Hospital, August 24, 1908.

The patient has been a habitual user of whiskey for the last twenty-five years, but not to the extent that he has had to lose time from his work. He also uses tobacco to excess.

The man gives an indefinite history of a sore upon his penis twenty-five years ago which was followed by a rash on his arms and legs, which latter was present for two or three years. He had typhoid fever last summer, the illness extending over a period of twelve weeks. During two weeks of this time the patient had several severe hemorrhages from his stomach. When the patient was able to get up he noticed a distinct

loss of power in his left arm, often dropping things which he had picked up with the left hand. He had some difficulty in his gait chiefly due to weakness in his left leg. Power was gradually regained on this side of the body and in two months he was again at work.

For one month prior to his entering the hospital, the man suffered with severe aching pains in the lower portion of his back. Three or four nights before he came to the hospital he sat for about three hours on a sidewalk to watch a parade, and upon rising to go home he felt weak and sick. During the next night he experienced pains of a dull aching character in the muscles of the right arm, and these were soon felt on the left side.

On the morning of the second day after this he was seized with a weakness and with sharp, shooting pains in his legs. These pains, which varied in character, were present about four weeks, were always worse at night and were felt most acutely in the upper extremities. The patient was confined to his bed for about one month, and during this time no tenderness in the muscles or along the nerve trunks could be elicited by handling. No vesical or rectal disturbances have been present during this time. Frequent severe headaches have been present. At times he still experiences slight dull pains in the muscles of his forearms.

Examination of the eyes of the patient shows that the pupils are small and slightly irregular in shape. He was formerly troubled with diplopia, but this has not been present from eight to ten months. He has slight ptosis of the left upper lid which he says has been present for several years. The pupils react promptly both to light and in accommodation. No nystagmus is present. The action of the motor cranial nerves seems to be normal. The tongue is protruded in the median line and shows a slight coarse tremor. The lungs and heart are apparently normal. The spleen is not enlarged and is not palpable. The musculature of the upper extremities is good and shows no atrophy. There is some slight weakness on the right side which is due most probably to an old fracture at the elbow joint. The biceps, triceps and radio-carpal jerks are present and equal on the two sides, apparently normal. Slight tremor of the hands is sometimes noticed, especially upon exertion. The finger-to-nose test is usually well performed, but at times slight ataxia is shown when the right hand is used.

No atrophy is present in the lower extremities and the musculature is well developed. The knee-jerks have varied from time to time, and during the last two months have been usually absent, even upon reinforcement. Today (October 22, 1908) a fairly active reflex is obtained upon the left side, but none can be obtained by striking the right patellar tendon. The Achilles jerk is absent on both sides. No patellar, ankle clonus nor Babinski response has ever been present. Power in the lower limbs is about equal on both sides, and there is no ataxia upon the heel-to-knee test on either side.

Plantar irritation causes flexion of all the toes into the soles of the feet, and also a marked contraction of the muscles of the thighs. The soles of the feet seem to be hypersensitive. Over the rest of the body tactile, pain and temperature senses are equally present and to a normal degree.

The patient's gait is apparently normal. With heels and toes together and eyes open there is very little swaying in any direction. With the eyes closed there is present a very slight degree of swaying which is not

marked. In testing the man in this way a faint trembling of the arms and legs and, in fact, of the entire body, is noted.

The examination of the urine gives the following results: Light amber in color; slight amount of light sediment is present; acid reaction; the specific gravity is 1025; no sugar nor albumin is present. The microscopical examination shows the presence of a few sodium and ammonium urate crystals, some epithelial cells and a few leucocytes.

A blood examination made October 1, 1908, showed the following: Red cells, 3,480,000; white cells, 12,000; hemoglobin, 70 per cent.; polynuclear leucocytes, 68 per cent.; small lymphocytes, 10 per cent.; large lymphocytes, 20 per cent.; eosinophiles, 2 per cent. No poikilocytes were found.

On October 9, 1908, the following was found: Red cells, 3,800,000; white cells, 10,000; hemoglobin, 75 per cent.; polynuclear leucocytes, 71 per cent.; large lymphocytes, 10 per cent.; small lymphocytes, 18 per cent.; eosinophiles, 1 per cent. No abnormal red cells were found.

On October 13, 1908, another examination was made: Red cells, 4,000,000; white cells, 10,100; hemoglobin, 75 per cent.; polynuclear leucocytes, 72 per cent.; large lymphocytes, 12 per cent.; small lymphocytes, 16 per cent. No poikilocytes or abnormal red cells were found.

Upon examination of the feces *Cercomonas intestinalis* was found, but no tubercle bacilli were demonstrable.

Dr. Dercum said he was reminded of a similar case admitted to the Jefferson Hospital last winter. The patient bore the surface features of a case of tabes. While there were present such symptoms as incoördination and loss of knee-jerks, the case soon proved to be one of pernicious anemia.

*(To be continued)*

# Periscope

## Allgemeine Zeitschrift für Psychiatrie

(Band 64. Heft 5, 1907.)

1. Some Motor Symptoms of Insane Patients. E. E. MORAVCSIK.
2. Psychoses with Focal Lesions. BOEGE.
3. Psychical Symptoms in Chorea Minor. KLEIST.
4. A Case of Self-mutilation (Plucking out of an eye) in Katatonic Raptus. H. WACHSMUTH.

1. *Some Motor Symptoms of Insane Patients.*—A description of some of the less usual stereotyped movements and allied phenomena observed in the insane, especially in katatonics, and in some paretics, with partial histories of some of the cases. The author does not attempt an explanation of these phenomena, which he thinks are as a rule impulsive, and only occasionally due to hallucinations or perversions of the muscular or common sensation. His article is illustrated by a number of reproductions of photographs.

2. *Psychoses with Focal Lesions.*—The author describes five cases which have come under his observation. The first case was one of cysticercus, the cysts occupying three areas, over the chiasma, on the under surface of the pons and medulla, and on the posterior surface of the spinal cord at the level of the seventh and eighth cervical segments. In the second case an infiltrating glioma of the white matter of the posterior portion of the corpus callosum and of the occipital lobe was found. The third case (an epileptic imbecile) showed two large cysts in the frontal lobes. The fourth presented a sarcoma of the hypophysis. The fifth showed a glioma which involved both frontal lobes and the genu of the corpus callosum. In all of these cases the symptoms were more or less indefinite. The mental condition was in each case one of dullness, apathy and inability to fix the attention, or as the author prefers to call it a "Pseudodementia." The first and third cases had epileptiform convulsions, the fourth while presenting a hypophysis tumor showed none of the trophic changes of acromegaly, and the fifth case was notable for the apparently sudden onset of the symptoms.

3. *Psychical Symptoms in Chorea Minor.*—The author, in connection with some investigations upon Wernicke's Motility-psychoses (published elsewhere), gives the conclusions which he has been able to draw from a study of the histories of 155 cases from the Halle Neurological Clinic in which the diagnosis of chorea minor was made. He first discusses the criteria which justify a diagnosis of chorea in cases presenting spasmodic involuntary movements, and quotes freely from a number of authors as to the mental state of choreics, what special psychoses are apt to be found in chorea and the possible mechanism of their production. He next takes up the somatic symptoms of chorea as evidenced in his cases. Along with the clonic contractions, he has observed in some instances a spasm of tonic character also. In severe cases all the muscles, even those of the vertebræ, are affected. The disturbances of coördina-

tion are hard to separate from the motor disturbances arising from interpellated and associated movements. In cases in which the disturbance of movement is purely due to failure of coördination and not to interpellated contractions and associated movements, the author has found—in opposition to Förster—that the synergistic muscles are less disturbed in their innervation than the antagonists. In the cases marked by loss of power, he thinks that the condition is, in the narrower sense, not ataxia or paresis, but rather an akinesis, the innervation of the muscles not being permanently cut off, but perverted or delayed, not always under the influence of the will, but sometimes possible a few moments later. Hypotonia of the muscles is present in nearly every case. The tendon reflexes he found often decreased, sometimes temporarily absent. In two cases Babinski's reflex was present. Increased skin reflexes, paresthesias, and sensitiveness over the nerves was observed in some cases. The excitability of the vessels of the skin is always, the sweat secretion often, increased in choreics. Of 154 cases in 81 there was either no statement as to mental condition or it was noted that there was no psychical disturbance. In 92 cases the psychical alteration is noted as mild, in 41 cases as severe.

Of the cases of the second group, the majority (65) showed "anxious-irritable uneasiness," 4 were slightly euphoric, and in 23 there was diminution of spontaneity both of speech and of movement. In 12 of the 41 patients of the third group, the symptoms were midway in intensity between simple emotional disturbance and decided psychosis. In three of these there were hallucinations, in two severe "affect" with hypochondriacal ideas. The remaining seven showed increased emotivity, a mixture of anxious and exalted mood, with restlessness, constant change in the movements of expression, and constantly recurring motor discharge, a condition resembling Wernicke's "hyperkinetic-motility-psychosis." The more severe cases presented mainly hallucinatory, delirious and stuporous conditions, with in some instances more or less marked stereotypy and negativism.

The author could not find that any of his cases presented in their entirety, the clinical pictures of the usually recognized psychoses, though the manifestations met with resemble most closely the "Angstpsychoses," the hallucinoses and the deliria especially Wernicke's Motility-psychoses, both the hyperkinetic and the akinetic. He discusses the question of localization of the lesions in chorea, which Anton has placed in the thalamus, Bonhoeffer in the tracts connecting the cerebellum and the thalamus, but presents no anatomical findings calculated to support either view or to bring out a new one.

Into his descriptions of cases it is impossible to enter here.

4. *A Case of Self-mutilation in Katatonic Raptus.*—The patient a woman of 40 years of age had been four times admitted to the Frankfort Asylum, each time with the clinical symptoms of katatonia, conditions of stupor alternating with those of excitement, and each time had improved enough to be taken home though never recovered. Upon her last admission she was in a condition of mental dullness, sat most of the time with set features staring before her, and could only with difficulty be gotten to reply to questions.

She remained in this condition until the next afternoon, when she suddenly became excited, leaped out of bed, and before the attendant could prevent her, tore out her left eye with about 3 cm. of the optic

nerve. She raged and struggled, tried to tear at the wound and at the other eye, and it required four attendants to restrain her. She remained excited, on the third day after the injury her temperature rose, she developed the symptoms of pneumonia and died on the fifth day. An autopsy confirmed the diagnosis of pneumonia as cause of death. No meningeal inflammation which could have originated from the orbital trauma was found. The eye muscles were as cleanly severed as in an operation wound. Considering the mechanism of the trauma, the author concludes that it is perfectly possible for a person to bring about this injury upon himself in a very short space of time, and it is doubtful if one attendant even if immediately at hand could certainly prevent its being accomplished. The only safeguard would be the restraining of the patient, which would be perfectly justified in a person who had presented such attacks of frenzy, or whose utterances gave any clue to ideas which might lead to such an act. In the case of this patient no such ideas could definitely be traced and she could later give no reason for the deed.

C. L. ALLEN (Los Angeles).

### American Journal of Insanity

(64, No. 4. 1908.)

1. On the Mechanism of Gliosis in Acquired Epilepsy. SOUTHARD.
2. The Development of the Modern Care and Treatment of the Insane as Illustrated by the State Hospital System of New York. MACDONALD.
3. An Insane Malingerer. DREW.
4. Alcohol as an Etiological Factor in Mental Disease. COTTON.
5. A Complicated Case of Brain Tumor. RICKSHER and SOUTHARD.
6. What are Pellagra and Pellagrous Insanity? Does Such a Disease Exist in South Carolina and What are its Causes? (A Report to the South Carolina State Board of Health by the Medical Members of the Board of Regents, and Staff of the S. C. State Hospital, Columbia.)

1. *On the Mechanism of Gliosis in Acquired Epilepsy.*—Believing that the three level theory of Hughlings Jackson is physiologically sound, and that his idea, that genuine epilepsy is due to a paroxysmal discharge in the highest level, contains at least an important suggestion as to the pathogenesis of epilepsy; the author proceeds to analyze his own findings in some cases and to discuss their bearings, in an original and suggestive paper. He feels that since it has so far seemed impossible to bring the various lesions reported in cells, fibers and glia into direct relation with epileptic phenomena, we should now proceed a step further and investigate the conditions which obtain at the synapses. He calls attention to the fact that some authors, particularly Bevan Lewis, and Clark and Prout, have found alteration of the cells of the second cortical layer a pretty constant change in epilepsy, while gliosis in the cortex is a lesion which it has been long sought to bring into connection with epilepsy. Now since there seems to be normally present in the brain some mechanism for inhibiting and controlling the various reflexes, and the epileptic paroxysm presents many of the characters of a violent and unrestrained reflex, he thinks that it may be explainable by the cutting off on the one hand of a normal inhibitory influence, and on the other of the

presence of a focus of irritation somewhere in the cortex. While we have reason to connect the large pyramidal cells of the deeper layers of the cortex with the motor function, he thinks that we know too little with reference to the role of the smaller cells of the more external layers, but from the frequency of its alteration in epilepsy—which he himself has also observed—he is inclined to ask, if the function of the cells of the second layer may not be inhibitory, and if their destruction may not favor violent and irregular discharge? As to glia increases which he has also found pretty constant, he suggests that even if it is primary and not necessarily dependent upon cell destruction—a condition which he has observed in one case, it may not only act as a focus of irritation, but by interference with the synapses, may on the one hand cut off the normal inhibitory influences which tend to flow from the cells charged with this function, and on the other may permit of lateral and uncontrolled discharge. As illustrative of his views he gives the findings in six cases, all of organic character, all of which showed areas of destruction of the cells of the upper layers with comparatively well preserved large pyramidal cells, and gliosis more or less extended. Into the details of these cases space does not permit entering here, nor does this abstract give more than a bare outline of this interesting and suggestive paper. The author's findings are illustrated by ten fine plates.

2. *The Development of the Modern Care and Treatment of the Insane*.—An address delivered before the International Congress of Neurology, Psychiatry, Psychology and Care of the Insane, at Amsterdam in September, 1907. The author traces the development of the "State Care" idea and its practical application in New York. At the end of 1906 there were in New York State fifteen state hospitals and twenty-three licensed private institutions, which were caring for 28,302 insane patients. The State Hospitals represent an investment of more than \$26,000,000.00, and cost for maintenance about \$5,000,000.00 yearly. The average weekly cost per patient was \$3.53 for the last fiscal year. The author classes the improvements which have resulted under the State Care Act and the Direction of the Lunacy Commission, under twenty-eight heads of which the most important items are the following: (1) Codification of the laws relating to the insane under the "Insanity Law." (2) Registration under the Commission of all qualified examiners in lunacy. (3) A complete registration of all persons committed as insane. This already embraces 75,000 cases. (4) Provision for transfer from one institution to another by order of the Commission. (5) Removal of patients to the hospitals by trained attendants of the same sex. (6) Removal of the legal distinction between acute and chronic cases and substitution of the name Hospital for that of Asylum. (7) Regulation permitting each patient to write a letter at least once in two weeks. (8) A provision for paroling patients for thirty days. (9) A regulation that patients upon admission be informed that they are legally committed. (10) Affording all patients the legal right to a hearing by the visiting Commissioners apart from any officer of the hospital. (11) Restriction of license to conduct a private institution to physicians having had at least five years' experience in the care and treatment of the insane. (12) Provision for clinical teaching in the State Hospitals. (13) Provision for appointment of medical internes. (14) Institution of competitive examinations for appointment on the medical staff of these institutions. (15) Increase and classification of wages and salaries. (16) Establish-



ment of training schools for nurses. (17) Appointment of consulting boards of specialists. (18) Provision for dentists. (19) An annual allowance for medical books and journals for the use of the staff. (20) Employment of a chef and corps of cooks in each hospital. (21) Adoption of a schedule of food supplies and a per diem ration. (22) Improvement in bathing methods and introduction of hydrotherapy. (23) All supplies to be purchased through competitive bids. (24) Abolition of restraint. (25) Tent life for the tuberculous and some other classes of insane. (26) More systematic employment of patients. (27) Establishment of the Pathological Institute. (28) Steps to the establishment of after-care for the insane.

3. *An Insane Malingerer*.—Discussion of the case of a man who having been sentenced to the state prison for murder, was afterward transferred to the Massachusetts Asylum for Insane Criminals, and after being observed for some time by the author was returned to the prison as not being insane, but later was again brought back to the Asylum. The author brings out the facts with regard to the history and conduct of this patient, which led him to decide that he was really a malingerer.

4. *Alcohol as an Etiological Factor in Mental Disease*.—The author discusses the effect of alcohol upon the production of insanity, directly, indirectly and through inheritance. He analyzes the views of different authors and gives some statistics from the Danvers Insane Hospital, which show a steady increase in the number of cases in which alcohol was considered the chief factor from 13.1 per cent. of the male admissions for the five years prior to 1903 to 25.6 per cent. for 1906. The percentage for all admissions both male and female rose from 12.6 per cent. in 1903 to 15 per cent. in 1906. While these statistics are considerably below those given by Kraepelin of 51.9 per cent for males and 33.9 per cent. for females, the author thinks that they afford at least food for thought.

The investigations of Kraepelin fail to show any serious difference in the ultimate effects of alcohol, whether taken as beer or in more concentrated form, nor is there any evidence that a people can acquire an immunity to the effects of alcohol through generations of addiction to its use. While owing to a difference in views and habits the education of the masses of the people with regard to the deleterious effects of alcoholic indulgence presents less difficulty in this country than abroad, the author thinks that the fact that alcoholism is increasing despite the fact that drinking is more and more frowned upon needs thoughtful consideration.

5. *A Complicated Case of Brain Tumor*.—A woman 45 years old, a year before admission to the hospital began to have headaches, was irritable and easily fatigued and her speech gradually became indistinct. There was gradually developed weakness on the left side of the body and some time later drowsiness, loss of memory and dizziness. Later she became disturbed, had visual hallucinations and slept badly. Upon admission there was ptosis of the left eyelid, pupils contracted, left larger than the right. The left arm and left leg were smaller than the right and there was impairment of movement most marked in the leg. The face was also parietic, reflexes were increased in the left leg and Babinski present. No definite disturbance of sensation could be made out, and stereognosis was good in both hands. An attempt to examine the eye grounds had to be abandoned owing to the production of nausea and

vomiting. Her condition grew gradually worse and she died about six weeks after entering the hospital.

The pathological findings were manifold, the most important being otitis media (about 5 c.c. of greenish pus from which a bacillus of the colon group was recovered), slight pericarditis, acute and chronic nephritis, chronic changes in both Gasserian ganglia, with giant cell formation and accumulation of lymphoid cells, but in which neither tubercle bacilli, nor *Spirochæta* could be demonstrated, a dural endo-thelioma measuring 4 by 3 by 2.5 cm. on the left side between the superior and middle frontal and precentral convolutions. Sclerosis of the basal arteries, multiple cysts in the pons, atrophy of the cells of Betz, especially in the right precentral gyrus and diffused areas of spinal meningo-myelitis, with some degeneration of the lateral pyramidal tracts. The authors discuss the relation of the clinical symptoms to the autopsy findings, but state that since the case offers nothing new as far as localization is concerned, they publish it chiefly as an example of an extremely complicated condition, and as showing what great changes in the nervous system may be associated with arteriosclerosis, and the important connection between middle ear suppuration and meningeal involvement.

6. *What Are Pellagra and Pellagrous Insanity?*—After reviewing the literature of the subject, the authors give a brief description of three cases observed in the State Hospital and one in private practice, adding to these brief descriptions furnished them, of six other cases which have come under the notice of two physicians in practice in Columbia. Their conclusions are that a disease much resembling the pellagra of Italy occurs in South Carolina, but as to whether it is identical with the Italian disease or not they do not feel justified in asserting. The cases which they describe do not harmonize entirely with the disease as observed in Italy, but resemble very closely the type described in Egypt, even to the presence in many of the cases of the hook worm. This latter association is an important and interesting one since from several parts of the South conditions presenting similar skin and intestinal symptoms and even some of the same mental symptoms as those reported by the authors have been described as being associated with the hook worm, and as being relieved by the evacuation of the parasites. Unfortunately the authors do not seem to have been able to make a very thorough investigation as to the possible etiology and pathology in their cases. Hence they add no new facts beyond the important one that the disease may occur in America. The three State Hospital cases all had a history of extreme poverty and of a diet into which corn entered very largely. One was a white person, the other two were negroes.

C. L. ALLEN (Los Angeles).

## Revue de Psychiatrie et de Psychologie Expérimentale

(August, 1907.)

1. The Treatment of the Insane by a Return to Country Life. A. MARIE.
2. Anatomico-clinical Considerations in a Case of Stupor. N. NOUET.

1. *Treatment of Insane by Country Life*.—A plea for agricultural colonization of the insane, especially those who may be benefited by such work as is done on a farm with the out of door life that goes with it. A short account of this colonization as it exists in America, Italy, Germany and Russia is included in the article.

2. *Anatomo-clinical Considerations in Stupor.*—Cases of stupor occurring in advanced age are rare. The patient under consideration, an old alcoholic, presented at sixty years of age an access of anxious melancholia with ideas of persecution, auto-accusation, and tendency to suicide. After a short delirious phase the patient fell into stupor accompanied by negativism. This continued without modification for seven years. The histological findings were the same as often found in dementia præcox: disappearance of the tangential fibers of the cortex, superficial cerebral sclerosis and subacute meningitis. The clinical picture also resembled the psychoses of adolescence. Should this case be classed with the psychoses of adolescence? The author thinks not although he says that during the period of involution the brain reaches a condition of degeneration which brings it into much the same condition as a brain not yet fully developed—hence the similarity of the picture. In closing the author speaks of the great difficulty in determining the mental state in stupor which may be a symptom of dementia, of confusion, or of melancholia.

(September, 1907.)

1. The XVII Congress of Alienists and Neurologists of France and French Speaking Countries. A. DELMAS.
2. Cardiographic Technique. M. PIÉRON.

1. *Congress of French Speaking Alienists and Neurologists.*—All of the communications to this congress are mentioned but mostly so briefly that they will not bear further abstraction. Three, however, together with their discussion are abstracted at some length. M. G. Ballet presented a communication on *medico-legal expertise and the question of responsibility*. He holds that the question of responsibility is metaphysical. It is a question for judicial decision and not one that the medical expert ought to attempt to answer. His function is to present the medical diagnosis of the case. M. A. Antheaume presented an exhaustive study of *les psychoses périodiques*. While all authors agree that a special place should be set aside for the periodic psychoses, there is a great deal of difference of opinion as to just what should be included in this group. The French generally have held that there are simple melancholias and manias, while Kraepelin, on the other hand, believes that a following up of these cases will show them all to be manic-depressives. The greater part of the communication is taken up with manic-depressive insanity. The diagnosis is often hard to make from dementia præcox, and the periodic accesses should be differentiated from simple mania and melancholia, from the accesses of exaltation and depression of degenerates, from confusion, neurasthenia, hysteria, epilepsy and general paralysis. As to prognosis the author concludes with the apparent paradox that the attack passes but the disease remains. ("Les accès passent mais la maladie reste.") M. Claude offered a paper on the definition and nature of *hysteria*. The author says we have not yet a satisfactory definition of hysteria. The diverse doctrines to explain its mechanism have been too narrow, the authors admitting certain phenomena explicable by a certain law and excluding others which did not come within its scope. The different theories belong to different schools and are the results of different points of view. Thus we have hysteria according to Sollier, Babinski, Charcot, Bernheim, etc. In spite of all this activity we are still discussing to-day the nature of hysteria.

2. *Cardiographic Technique*.—The description of a cardiograph and the method of its employment.

(October, 1907.)

1. Psychotherapy and Surgical Psycho-therapeutics. L. PICQUÉ.

1. *Psychotherapy*.—For some years psychotherapy has been attracting attention. The psychiatrists and neurologists have used it principally; but if it is useful to the physician why may it not also be a useful therapeutic agent for the surgeon? The author takes up the discussion of a certain class of cases with mental symptoms, hypochondriacal, in which operation may be indicated. It is very necessary to study carefully the mental condition first. It is useless to operate in old, confirmed hypochondriacs, even with visceral lesions, with the expectation of a cure of the mental state. Cures are favorable in proportion to the earliness of operation before the delusional ideas have become crystallized.

(November, 1907.)

1. The Experiments of Shepherd Ivory Franz on the Physiology of the Frontal Lobes. P. JAQUELIER.

2. Remarks on the Clinical Action of Iodide on the Course of States of Stupidity and Confusion. H. DAMAYE.

1. *Physiology of the Frontal Lobes*.—A critical review of the excellent work of Franz. As this is a work by an American author it is not abstracted. The original is published in the Archives of Psychology, March, 1907, New York, The Science Press.

2. *Action of Iodide on Stupidity and Confusion*.—The author found good results in conditions of stupidity and confusion from the administration of iodides. The action, he concludes, was that of a stimulant and perhaps as an adjuvant in the antagonism of the organism against infection.

(December, 1907.)

1. Hospitalization of Defectives in Central Europe. E. BLINN.

2. The International Congress at Amsterdam. J. VAN DEVENTER and F. A. MELCHIOR.

1. *Hospitalization of Defectives*.—A review of the methods of dealing with defectives based upon conditions observed in Germany, Austria and Denmark. The author recommends separate accommodations for defectives. They should not be confined with and contaminated by the insane. Education is most important and may enable some to leave institutional care, while farm work is recommended both for the patient, and, because of its remuneration, for the hospital.

2. *The Amsterdam Congress*.—The various contributions are so condensed as not to permit of further abstraction.

WHITE (Washington).

Monatsschrift für Psychiatrie und Neurologie.

(Vol. 20. Nos. 1-6.)

1. Normal and Pathological Histology of the Human Neuroglia. G. EISATH.

2. Contribution to the Knowledge of the Fiber Tracts of the Cerebrum. F. QUENSEL.

3. The Mental Causes of Melancholia. ALBRECHT.
4. Sensory Paths in the Spinal Cord of the Dog. SCHÜSTER.
5. Clinical and Anatomical Study of Tumors of the Cord and Spinal Column. STERTZ.
6. Successive Extirpation of a Frontal Lobe and one Cerebellar Hemisphere. MINGAZZINI and POLIMANTI.
7. Studies on the Brain Weight of Idiots. VOGT.
8. On the Relation Between the Idea of Motion and Motion and their Physical Influences. WEBER.
9. The Value of Cytological Examination of the Cerebrospinal Fluid in Neurology. APELT.
10. Cysticercus of the Fourth Ventricle. HENNEBERG.
11. Pseudo-arteriosclerosis and Neurasthenia. ORSCHANSKI.
12. Alcoholism and Heredity. RYKABOW.
13. Hysterical Paralysis of the Muscle Sense with Intact Sensibility. TETZNER.
14. Sporadic Cretinism and the Mental Disturbances in Myxedema. WENDENBURG.
15. Experimental Studies on Traumatic Cerebral Hemorrhage. YOSHIIKAWA.

1. *The Normal and Pathological Histology of the Human Neuroglia.*—None of the neuroglia methods hitherto devised has given a satisfactory stain of the glia cell body. The author describes a modification of Mallory's hematoxylin fiber stain, using tannic acid to bleach out the axis cylinders, with the result that a good picture is obtained not only of the glia fibers and nuclei but also of the cell body. The author describes the normal glia tissue and reviews the Golgi-Weigert controversy. It is now known that there are two types of glia cell processes—the protoplasmic process and the so-called Weigert fibers (intercellular substance of Weigert). The Weigert fibers are not independent or structurally separate elements but they belong immediately to the cell and form with it a real unit. The glia tissue of the cortex has only protoplasmic processes, while that of the marrow has both protoplasmic and Weigert fibers.

After discussing the neuroglia alterations of paresis and senile dementia the author reports the findings in seven cases of *dementia præcox*, the discussion of which forms the major portion of the contribution. In the acutely coursing cases the findings are as follows: The middle-sized and the small glia nuclei, gray-green in the normal, take a decided blue color. In addition are found large clear nuclei which in the marrow may be tremendously swollen. The outline of the round glia cell is lost or seen as a wide border—very rarely is the normal delicate cell outline visible. The granular substance of the glia cell body is increased and coarser than the normal and is mostly arranged in heaps or irregular rows about the nucleus or superficially as a band-like zone forming the cell border. The glia cells of the cortex show none of the protoplasmic processes which the glia elements in the normal cortex do. Satellite cells (Trabantzellen) are seen in the form of small glia elements (dwarf cells) close to ganglion cells or penetrating them. The fibered satellite cells arrange themselves around ganglion cells and always take on a sickle shape. No characteristic change is seen in the Weigert fibers.

The chronic cases of dementia præcox have, as an additional finding, in the deepest layer of the cortex and in the marrow, an increase in the

fibred glia cells, both protoplasmic processes and Weigert fibers showing an overgrowth. The alterations ascribed to dementia præcox are held to be in the main indicative of a regressive change and thus stand in contrast to the proliferation of glia elements seen in paresis, epilepsy, sleeping sickness, senile dementia and alcoholism. The author even feels justified in outlining the differential diagnosis from the histological picture.

G. H. KIRBY.

2. *Contribution to the Knowledge of the Fiber Tracts of the Cerebrum.*—Three cases of lesions in the temporo-occipital sensory speech zone are briefly reported clinically and admirably analyzed anatomically. The surface-anatomy is enriched by an especially careful indication of the parts of convolutions.

The writer is the first to start from the true auditory receiving center, the transverse temporal gyrus, T.tr. In two cases (E and D) this cortical area is intact, but its auditory radiation is more or less cut into from behind. In the other case (A), the entire T<sub>1</sub> is softened and only the most superior mesial part of T.tr. is preserved and with it part of the auditory radiation. (Of the three cases only the third has a permanent extensive word-imperception.) All the three cases show distinct atrophy of the internal geniculate body, case A, also atrophy of the brachium corporis quadrigemini post. Dejerine's connection of T.tr. with the pulvinar is not corroborated. Türck's bundle (from the auditory field to form the lateral part of the crus, "without participation of fibers from the occipital lobe") is partially affected in the three cases, in keeping with the participation of the radiation of T<sub>1</sub>; the most external part of the bundle is, however, best preserved in all the three cases; in A (where T.tr. is destroyed with the exception of a mere rest at its base) the degeneration is most marked. Anton and Zingerle found atrophy but partial preservation of the most lateral part of Türck's bundle in a case with degeneration of the island and of T<sub>1</sub>, T<sub>2</sub> and part of T<sub>3</sub>, and they refer these most lateral fibers to the basal and mesial regions of the temporal lobe. Concerning the optic radiations, the three cases support Flechsig's views: the external sagittal marrow (geniculo-calcarine path) is degenerated cortico-petally, the internal sagittal marrow (from the calcarine to the pulvinar and anterior colliculus) only atrophic. The intercalate ("parietal") radiation is least affected in A, where the supramarginal and angular cortex is most involved, and it is most affected in E, where this cortical region is least affected superficially. In A, these fibers are followed partly into C p. (posterior and central gyrus) and partly into the posterior part of the fornicate gyrus, whereas the bundle of this complex nearest to the optic radiation is degenerated and can be followed into the hippocampus. In the thalamus only the pulvinar is affected and possibly the most posterior part of the dorso-lateral nucleus. In the case E, the focus involves the retrolenticular part of the internal capsule; hence the degeneration into the supracingular field and into C p. The fibers of the reticular field of the corona radiata (occipito-frontal bundle of Sachs) constitute the posterior upper thalamus bundle to the fornicate gyrus, with a possible connection with the globus pallidus. The pyramidal fibers are slightly involved in A and E.

The discussion of the association-paths is equally instructive. Meynert's U-fibers develop after the projection and callosal fibers and in a fairly definite order. The longer association-paths appear later, especially between the projection fields and the terminal areas (those latest

developed), not among the sensory areas themselves. Burdach's inferior longitudinal fasciculus is certainly not an association bundle (its basal part is preserved in A, and plainly geniculo-calcarine). Flechsig recognized fibers from the auditory and the visual field to O<sub>2</sub> (not to the angular gyrus, as Dejerine would have it). In case D, the fibers passing occipitalward interrupted in the angular gyrus ended in the middle of O<sub>2</sub> and O<sub>3</sub>. Further Quensel saw fibers from the posterior part of T<sub>3</sub> and T<sub>4</sub> and the anterior part of O<sub>3</sub> running forward to T<sub>1</sub>, in front of the foot of T.tr., but not into T.tr. More laterally fibers from more anterior parts of T<sub>3</sub> can be followed into the anterior half of T<sub>1</sub>, and perhaps also into the deeper parts of the external capsule (certainly not fibers from the occipital radiation).

The transverse occipital bundles of Sachs and Vialet are partly disputed; Wernicke's vertical occipital bundle is accepted as fibers between T<sub>4</sub> and T<sub>3</sub> and P<sub>2</sub>, or as part of the arcuate bundle, between Flechsig's fields 34 and 36. The arcuate bundles include: a thick-fibered bundle from Cp to the posterior association-field and a thin-fibered one in the opposite direction, connections between fields 2 and 36 and 34, and 2 and 12. In his case Quensel found evidence of a centro-parieto-occipital path, possibly also connected with F<sub>2</sub> and F<sub>3</sub>, but not with F<sub>1</sub> and the upper part of C. The external capsule shows no long paths between the arcuate and the uncinat bundles. The uncinat bundle is attributed to field 36 by Flechsig. In cases D and E, it was undamaged; in A, only its posterior part is degenerated, hence possibly a partial interruption in the island. The cingulum is doubly affected in E, in the angle of the fornicate gyrus above the knee of the callosum, and in the isthmus lobi limbici. The anterior focus determined only a short degeneration between the gyrus fornicatus and regio parolfactoria. Flechsig's primary cingulum is an association path of the rhinencephalon, his secondary cingulum a projection system to the inner part of T<sub>1</sub> and the middle part of the fornicate gyrus, and the tertiary system consists merely of shorter association paths.

The occipito-frontal bundle of Forel and Onuf is a heterotopia of the callosum and does not exist in normal brains. It is the "reticulated coronal field." The fine fibers which form the fasciculus subcallosus or stratum subcallosum, possibly an association of the caudate nucleus itself (thicker fibers) and between the caudate nucleus and scattered cell-nests and the cortex of the frontal and parietal lobe, suggests in case A fibers to the precuneus, parieto-occipital cortex and lateral part of O<sub>1</sub>, in case D to O<sub>1</sub> and O<sub>2</sub> and angular gyrus, in case E from the frontal base and anterior marginal gyri to the head of the striatum, and again to the parietal lobe and to the pole of the temporal lobe. Thick fibers were not observed and the direction is not determined. The callosum has both real commissure and decussating fibers specially discussed with regard to the tapetum. Nothing new was established concerning the anterior commissure. Altogether this is the best paper dealing with secondary degenerations of recent years.

ADOLF MEYER.

3. *Mental Causes of Melancholia*.—The author's review of 55 cases of melancholia (Involution Melancholia of Kraepelin) shows that in 56 per cent. the mental factors played the most important role in the etiology. The psychical causes are chiefly depressing influences of a chronic nature particularly grief and worry. In a few cases acute emo-

tional shocks precipitated the psychosis. The depressive affect is believed to act as a vaso-constrictor stimulus causing improvement of the blood supply and disturbance of nutrition. When by means of opium or baths the vaso-constrictor spasm is relieved then the most prominent psychical symptom of melancholia, the anxiety, disappears. The fact that more women than men are affected is due to the greater sensitiveness of the female nervous system; psychic causes exert a special influence in the climacteric period where we see normally various kinds of stimuli from the genital organs acting on the neurovascular system. Heredity plays a subordinate role.

4. *Sensory Paths in Spinal Cord of the Dog.*—This study is based on extensive experimental work. A marked disturbance of tactile sensibility appears when the posterior columns in the lower dorsal cord are destroyed; the sense of position is at the same time affected. The impairment of pain sense is very probably due to destruction of the middle part of the lateral columns adjacent to the gray matter. Disturbance of temperature sense coincides more with the loss of pain sense than with loss of tactile sense. The impairment of touch and pain sense occurs on the side of the operation.

5. *Tumors of the Cord and Spinal Column.*—This study is a review of 8 cases. In every case some important diagnostic signs were absent. In the 5 cases of extra-medullary tumor, prodromal neuralgic symptoms were completely absent in two; the Brown-Séquard complex was present in only one case; a slow but steady progression in the compression symptoms occurred in only two cases. In no case were all of the three mentioned symptoms present and in one case all three symptoms failed. In the 3 cases of intra-medullary tumor the most characteristic signs were slow, and without demonstrable cause, progressive appearance of spinal symptoms with diminution of pain and an uninterrupted course to death, in a relatively short time. The differential diagnosis from other spinal affections such as myelitis, syphilis, multiple sclerosis and combined tract disease, is made not on the momentary picture but on the course. One should not hesitate to trephine in doubtful cases.

6. *Successive Extirpation of a Frontal Lobe and one Cerebellar Hemisphere.*—A series of experiments carried out on dogs, show that the weakness and ataxia which results when one frontal lobe is extirpated are very similar to the symptoms which result when one hemisphere of the cerebellum is removed. When both operations are successively performed, the disturbance is greatest when they are performed on opposite sides (*i. e.*, left frontal lobe and right cerebellar hemisphere or vice versa).

7. *Studies on the Brain Weight of Idiots.*—The author reviews a large material comprising the various forms of idiocy and concludes that the brain of the idiot shows a growth; this growth ceases at about the same age as does the brain growth of the normal individual, perhaps rather earlier. The brain of the idiot remains behind the normal in development because of its deficient endowment and slight tendency to growth.

8. *On the Relation Between the Idea of Motion and Motion and Their Physical Influences.*—In this study the plethysmograph was applied to an arm which was rendered immobile. Voluntary muscular movement in distant parts such as the foot, tongue, jaw, etc., caused an increase in the volume of the arm with increase of blood pressure corresponding to a contraction of the abdominal blood vessels. Increase in



the volume of the arm, general rise in blood pressure and contraction of the abdominal vessels also occurred in hypnotic states when the idea of an action was suggested (no movement being actually performed). The same result was obtained, but less regularly, in the waking state if the will and attention were concentrated on an action. On the other hand, if in hypnosis, will and attention were excluded by suggestion then passive movements could be carried out without causing any increase in the volume of the arm. The writer concludes that similar fluctuations in blood distribution occur in a person who merely thinks of motions as occur in an animal whose motor cortex is electrically stimulated.

9. *The Value of Cytological Examination of the Cerebro-Spinal Fluid for Neurology.*—This paper gives the result of 150 punctures made on 124 patients. The author adds little to previous investigations and in several instances the findings reported are of slight value without autopsies. Among the neuroses (hysteria, neurasthenia, epilepsy and paralysis agitans) no lymphocytosis was found except in one case of "neurasthenia" with a luetic history (paresis?) and in one epileptic with symptoms suspicious of tumor. Among various psychoses (melancholia, dementia præcox and alcoholic insanity) no lymphocytosis was found. One brain tumor case (round cell sarcoma) gave a positive reaction. Another case with a spindle cell sarcoma gave no lymphocytosis. In six cases of cerebral apoplexy, two gave a positive reaction, one of these being probably syphilitic; the others all denied lues. In eight cases of cerebral syphilis six gave a positive reaction while in the other two no lymphocytosis was demonstrated (without autopsy one would doubt the correctness of the diagnosis). In ten cases of delirium tremens there were no positive reactions. Twenty out of twenty-one cases of paresis had a lymphocytosis. In the one negative case the clinical picture was not typical (such a case decides nothing without autopsy). Thirty-two cases of tabes were all positive. Three cases of alcoholic polyneuritis gave a negative result, but one case of polyneuritis with Korsakow's delirium gave a lymphocytosis. In one case each of amyotrophic lateral sclerosis, poliomyelitis anterior chronica, syringomyelia and transverse myelitis no lymphocytosis was found. One case of multiple sclerosis out of five gave a positive reaction.

10. *Cysticercus of the Fourth Ventricle.*—To the 59 cases existing in the literature the author adds six. The observations of Bruns and Oppenheim have done much to increase our knowledge of the symptomatology of this affection and a diagnosis, ante mortem, is not impossible in some cases. The symptoms depend in the first place on the accompanying hydrocephalus, and headache, dizziness and vomiting stand in the center of the picture. A remittent course is characteristic, the patient showing rapid alterations between apparent good health and a condition with severe cerebral symptoms. Of particular importance is the so-called Bruns' symptom, viz., the occurrence of dizziness and nausea when the head is moved suddenly. Tumors of the cerebellum or growths in the third and fourth ventricle springing from the ependyma or choroid plexus may cause a similar clinical picture.

11. *Pseudo-Arteriosclerosis and Neurasthenia.*—An extensive review is given of the neurasthenic complex with special emphasis on the vasomotor and vascular symptoms. The author investigated in a large material the anatomical and functional alterations observed in the arterial system, including a study of the blood pressure by means of the finger tonometer.

One of the most constant signs in neurasthenia is a "pseudo-arteriosclerosis," *i. e.*, a striking hardness of the arteries, especially the brachial and radial, varying with the position of the arm—the vessel showing most rigidity when the arm is in a dependent position, becoming softer when the limb is elevated.

The results of the study are given as follows: In severe cases of neurasthenia, particularly those of constitutional type, one finds (1) an increase of tendon reflexes (especially the knee jerk); (2) diminution of the blood pressure in the finger; (3) pseudo-arteriosclerosis of the radial. These signs are often asymmetrical, *i. e.*, more marked on one side of the body than the other and they occur almost always on one and the same side of the body. The various symptoms of neurasthenia are referable to a disturbance in the vasomotor control of the vascular system which causes an impairment of nutrition in the nervous system and interferes with the function of various organs. Neurasthenia must be viewed not as a purely functional disease but as a disorder arising on a somatic basis. Constitutional neurasthenia shows clinically and anatomically a precocious but temporary senility of the organism.

12. *Alcoholism and Heredity.*—This study deals with the data obtained at the Moscow Clinic from 600 drinkers. Alcoholism, nervous affections or mental diseases existed in the direct or collateral branches in 94 per cent. Alcoholism in the family was found in 92 per cent. of all drinkers, while mental or nervous disease was present in only 21 per cent. of the whole number. Sixty-six per cent. of the drinkers had intemperate parents. Alcoholic heredity is greater in the periodic drinker than in the habitual drunkard or the casual drinker. Periodic intemperance is very apt to appear in the same form in the offspring.

Intemperance in both parents leads to severer forms of alcoholism than intemperance in one parent.

The author concludes from his review that in order to become a drunkard one must first of all inherit the disposition.

13. *Hysterical Paralysis of the Muscle sense with Intact Sensibility.*—In a case of traumatic hysteria there were no cutaneous sensory alteration, motor paralysis, astereognosis or loss of sense of position, but when the eyes or ears were closed then the patient became completely unable to execute even simple movements.

The author's investigation of the case supports Pick's theory that the symptom is due to a contraction of the field of attention.

14. *Sporadic Cretinism and the Mental Disturbances in Myxedema.*—Among the earliest physical signs in childhood are increase in size of tongue, delay in dentition and slowness in learning to walk. Gastro-intestinal disorders, especially constipation, appear early.

In the mental sphere the most striking deviation is the apathy. The intelligence, memory and judgment may be good. The patients have excitements resembling manic attacks with distractibility, loquaciousness and motor unrest. The accompanying mood shows, however, monotony and lack of affect.

15. *Traumatic Cerebral Hemorrhage.*—Experiments were carried out on a number of rats, the animal being killed immediately after a trauma of the head. Hemorrhage into the brain tissue without signs of concussion was frequently observed. No traumatic aneurysms were found. Hemorrhage in cases of fracture of the skull was not less than in those with no fracture. Hemorrhages were widely distributed but especially

common between the frontal lobe and olfactory bulb. In the spinal cord, near the central canal, bleeding was frequent.

G. H. KIRBY (Ward's Island).

### Journal de Psychologie, normale et pathologique

(Fifth Year, No. 2. March-April, 1908)

1. Inversion of Orientation or Ideational Allochiria. P. JANET.
2. The Mental Disease of Robert Schumann. DR. PASCAL.
3. Clinical Contribution to the Study of Dream Deliria. A. VIGOUROUX and P. JUQUELIER.

1. *Inversion of Orientation*.—The case reported by Janet was that of a woman, 29 years of age, who began to experience, immediately after her last confinement, a peculiar and intolerable inversion of the sense of orientation. There were no other subjective or objective symptoms of any sort. Whenever she went into or came out of a room, she had a strange and unconquerable feeling that she was doing the reverse. When riding in a carriage, it seemed to her that she ought to be going in the opposite direction to reach the desired destination. In spite of this feeling she never uttered the slightest protest to the driver of the carriage, for her reason kept telling her all the time that she was actually going in the proper direction. Notwithstanding the intensity of the inverted feeling when out walking, she never allowed it to mislead her. She kept the desired course by noting carefully the names of the streets and the order of objects familiar to her along the way.

Janet speaks of the phenomenon as a sort of psychic allochiria, and postulates four possible explanations, the last of which he deems the most plausible. The condition is not wholly unknown in the normal state, as witness the feeling that some people have when on a moving train that they are going backwards instead of forwards. One hypothesis attributes the phenomenon to a purely sensorial trouble, involving in some way the semicircular canals. In Janet's case this explanation is untenable in view of the fact that there were absolutely no sensory disorders of any sort. A second explanation associates the feeling with a genuine illusion. As against this view, however, it is to be noted that the inversion did not apply to objects along the course of the journey but to the end of it. The feeling was that she ought to be going in the opposite direction, but the right direction was maintained by following carefully the familiar objects along the way. The third possible hypothesis aligns the symptom with the feeling of strangeness so often complained of by neurasthenics and other psychoneurotics. It is possibly even related to that form of negativism, so elaborately studied by Janet and others, known as "the feeling of the already seen." The fourth, and Janet's most favored, explanation attributes the trouble to a form of psychic allochiria, not far removed from such manifestations as allosynesia, mirror-writing, etc.

2. *The Mental Disease of Schumann*.—Unlike some other writers who have studied the life and life-work of Robert Schumann the composer, Pascal sees no direct relationship between his genius and mental invalidism. In fact he maintains that the genius was here the normal man, struggling with the incubus of disease. Between the outbursts of the latter, the former revealed itself along normal artistic lines. The real

affliction of the composer was, according to Pascal, a constitutional psychasthenia in early life and a sensory form of general paralysis in later life. Of the latter disease he died in an asylum.

3. *A Study of Dream Deliria*.—This article cannot be well abstracted as it consists of elaborate and detailed reports of a number of cases of intoxication, with comments upon the forms of delirium manifested in each.

METTLER (Chicago).

### Review of Neurology and Psychiatry.

(Vol. V. No. 10)

1. The Exact Determination of Areas of Altered Sensibility. WILFRED TROTTER, and H. MORRISTON DAVIES.

2. Case of Trigeminal Nevus, Associated with Epilepsy and Contralateral Hemiparesis. J. W. STRUTHERS.

1. *Determination of Altered Sensibility*.—The method suggested is that the patient himself explore the suspected area with his finger-tip and to mark where he feels lines of transition to occur, looking at the part and using any degree of lightness of touches which enables him to make the distinction. It is designated the "stroking method." Claimed advantages are that it avoids the troubles due to expectant attention; and introduces a relatively constant minimal pressure. Its advantages are most marked in the investigation of areas not entirely insensitive to cotton-wool, and in the analysis of such areas into districts of varying degrees of tactile change. The maximal area obtained by this method is sharply defined and contains within it all the sensory changes—pain, temperature, touch—produced by the nerve lesion. Comparative methods in six cases are given with illustrations.

2. *Case of Trigeminal Nevus*.—Emulating Cushing, Struthers operated and records negative findings.

(Vol. V. No. 11)

1. The Mechanism of the Plantar Reflex, with Especial Reference to the Phenomenon of Crossed Reflex. PHILIP COOMBS KNAPP.

2. Arterio-Sclerosis in Relation to Mental Disease. C. MACFIE CAMPBELL.

1. *The Mechanism of the Plantar Reflex*.—The writer assumes in his explanation of a crossed flexor reflex, that in some cases the peripheral sensory neurones are heteromeric, one process passing up on the same side of the cord to the bulbar nuclei, the other crossing over to the opposite anterior horn to the motor cells for the flexors of the great toe.

2. *Arterio-Sclerosis in Mental Disease*.—In some mental cases a cardio-vascular disorder seems to be the central element in the clinical and anatomical picture. Of these, an etiological grouping and analysis is desirable. Some have the depression type (melancholia, hypochondria, neurasthenia, etc.) as a basis; others are true conditions of dementia whose varying forms cannot as yet be differentiated. In some cases, the neurological picture is but slightly tinged with a mental element. In certain cases of epilepsy with onset late in life, the convulsions and general symptomatology are closely related to arterio-sclerosis.

(Vol. V. No. 12)

## 1. Unusual Sequela of Herpes Zoster (? Posterior Poliomyelitis). ALEXANDER BRUCE.

1. This paper is a clinical one unaccompanied by post-mortem findings. The herpes was located at the right seventh and eighth intercostal spaces. At one time there developed muscular weakness of the right leg; exaggeration of the deep reflexes; extensor plantar reflex; loss of pain and thermal sense in right abdomen and leg; conservation of muscle sense and tactile sensibility. The patient recovered in about four months except for troublesome paresthesias (thighs feel as if burning and feet and lower legs as if incased in ice). The writer comments that herpes is a condition which may lead from the spinal ganglion not infrequently to widespread lesions within the cord itself.

C. E. ATWOOD (New York).

## Revue Neurologique

(Vol. 16. No. 16. August 30, 1908)

(Congress of Alienists and Neurologists of France)

1. Opening Address by the President—Glance at the Medical Psychology of the Court World in the Time of Louis XIV. DR. CULLERRE.
2. Report of the Psychic Trouble due to Disturbance of the Glands of Internal Secretion. LAIGNEL-LAVASTINE.
3. Report on the Clinical and Diagnostic Forms of Neuralgia. HENRI VERGER.
4. Report on the Care of Abnormal Infants. RENE CHARON.

2. *Disturbance of Glands of Internal Secretion*.—A systematic review of the relation of psychic troubles to disturbance of secretion of the thyroid, parathyroid, thymus, hypothysis, suprarenal, ovaries, testicles, prostate and salivary glands. Also the relation of the different glands to each other. The second part is devoted to the changes of the glands of internal secretion in various conditions such as: delirium, dementia, epilepsy, hysteria, neurasthenia and psychasthenia. Other communications relative to the glands of internal secretion were: "The Blood Vascular Glands in the Insane," by Dide; "Suprarenal Capsules in Anencephalus," by Léri; "A Study of Seventeen Cases of Epilepsy from the Point of View of the State of the Glands of Internal Secretion," by Claude and Schmieregeld; "The Psychonervous Syndrome of the Thyroid," by Léri and Rothschild; "Psychasthenia from Deficiency of Thyroid and Ovarian Secretion with Successful Opothrapy," by Léri and Rothschild; "Ovarian and Hypophysis Therapy in Certain Mental Troubles," by Sollier and Chartier; "The Relation of Katatonia to Alterations in the Parathyroid and Thyroid Glands," by Parhon and Urechia; "Anatomical and Pathological Researches on the Thyroid and Hypophysis in Two Cases of Chronic Rheumatism," by Parhon and Goldstein.

3. *Clinical and Diagnostic Forms of Neuralgia*.—The author divides neuralgia into the peripheral, radicular, and central types; the last being due to disease of perceptive centers constituting a true hallucination.

4. *Care of Abnormal Infants*.—A classification of abnormal children, statistics and review of the method of caring for and treating these children in different countries.

(Vol. 16. No. 17. September 15, 1908)

1. Neuralgia of the Right Side of the Face and Facial Hemispasm on the Same Side. BOUCHAUD.

2. A Case of Multiple Sclerosis With Hypotonia. LAMBRIOR.

1. *Report of a case.*

2. *Multiple Sclerosis With Hypotonia.*—There was an exaggeration of the reflexes in the hypotonic limbs. The author explains the hypotonia on the theory that there was an area of sclerosis in the center for muscle tonus; following the view of van Gehuchten that the center of tonus and center for the reflexes are not the same.

(Vol. 16. No. 18. September 30, 1908)

1. *Vasomotor and Trophic Troubles of Hysteria.* ALFRED GORDON.

1. The author reports two cases. In the first one, a woman aged forty-five developed symmetrical yellow spots on both arms, following a quarrel with her husband; the second time they were noticed within a half an hour after an hysterical attack. A second case showed ulcerations in the left arm and breast. There were numerous stigmata of hysteria. The ulcerations were cured in fifteen days by measures which the author regards as psychotherapy. In conclusion, "hysteria produces direct trophic and vasomotor trouble."

(Vol. 16. No. 19. October 15, 1908)

1. *Two Cases of Chronic Syphilitic Meningitis.* C. VINCENT.

1. These two cases are reported with the object of showing that syphilitic meningitis can exist without involvement of the brain or spinal cord and be accompanied by no objective nervous symptoms.

(Vol. 16. No. 20. October 30, 1908)

1. Some Remarks on a Paper by Alfred Gordon, Entitled: "Vasomotor and Trophic Troubles in Hysteria." BABINSKI.

2. Regional Anesthesia by Spinal Stovainisation. AVRAMESCO.

1. *Vasomotor and Trophic Troubles.*—Babinski criticises the hysterical origin of the trophic and vasomotor disturbances reported by Gordon, and concludes with the observation that "the only conclusion which one can draw from this work, which is not disclosed by the title, is that the author is very resourceful in dermatologic description."

2. *Regional Anesthesia.*—In spinal stovainisation it is not the cord which is anesthetised but only the roots of the spinal nerves, and to anesthetise any region of the body it is only necessary to inject stovaine into the neighborhood of the spinal nerve roots which innervate that region.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### A STUDY OF THE AXIS-CYLINDERS IN FIVE CASES OF GLIOMA CEREBRI

BY CHARLES METCALFE BYRNES, M.D.

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It is not infrequently observed in a variety of neuropathological conditions, such as multiple sclerosis, tuberculoma, areas of compression and gliomata, that the necropsy reveals a much more extensive process than could have been even suspected from a most thorough clinical examination. This disproportion between the diseased area and the symptoms induced is, perhaps, more pronounced in gliomata than in any other condition, and it is to this pathological state that my attention has been directed.

It is well known that gliomata may exist for months or even years without causing either general or localizing symptoms of brain tumor. This might be conceivable where the tumor is situated in a silent area. According to Brush (1), however, such may be the case even though a localizing center be involved, and several cases have been reported in which no abnormal condition was manifested during life. On the other hand, those cases which do make themselves obvious to the clinician, occasionally show so few symptoms or else they have existed for so short a time that one is quite surprised when the pathologist presents him with a specimen in which one or more lobes, or a greater part of the brain stem is markedly involved; while a still more interesting feature is the occasional absence of degenerative changes above or below the lesion. Considering the ordi-

narily slow growth of such tumors, the questions naturally arise: How are we to explain this persistence of function and absence of degenerative changes where the cerebral tissue is extensively involved; and how are we to account for the apparently rapid cases which show a pathological state similar to those existing for months or even years?

The answer to the first question will naturally include the second, for if we can explain the persistence of function in simple uncomplicated gliomata, and if we admit that they can exist for years without producing symptoms; then the so-called rapid cases might easily be due to some intercurrent condition, such as hemorrhage, areas of softening or myxomatous changes in a pre-existing gliomatous mass which had hitherto been quiescent. However this may be, it shall be my effort to demonstrate that in simple cerebral gliomata persistence of function and absence of degenerative changes in the spinal cord may be explained upon a definite histological basis.

Let us review first the theories which have been offered in explanation of these facts.

From a study of the few cases which have been examined with this object in view, two rather theoretical explanations may be formulated. The first might be called the theory of displacement and is well illustrated in the case reported by Schorstein and Walton (2), who studied a glioma of the pons in a male child four years of age. Examination revealed slight spasticity of the lower extremities, more marked in the right side, and some weakness in the right arm. The left arm was practically normal. Increased knee jerks, no ankle clonus, and Babinski was negative. Duration—two months. There was found at autopsy a tumor measuring  $2 \times 1\frac{1}{2}$  inches, situated in the left half of the pons and medulla, with slight invasion of the right half. The new growth passed gradually into the surrounding normal tissue, and showed in its center an area of softening. Microscopic sections were made from each half of the pons and from six different regions of the spinal cord. Those from the pons were stained with polychrome methylene blue. The right half showed some normal pontal tissue with many disarranged pyramidal fibers in the midst of a cellular tumor. The left half showed no normal pontal tissue, and an apparent absence of the transverse pontal and pyramidal fibers. Sections from the cord



were stained with Busch's fluid, and hemalum and Van Gieson. Those stained by the former method showed no degenerative changes in any part, while the Van Gieson stain revealed the usual number of axis-cylinders.

Although the clinical findings and pathological condition at the site of the lesion were somewhat at variance, it is the absence of degenerative changes in the cord which constitutes the striking feature in this case. How could there be complete absence of pyramidal fibers in the left pontal region, with decided evidence of functional disturbance, and yet no sign of degeneration in the spinal cord? The author's explanation was that the left pyramidal fibers had been "pushed aside" without an interruption in continuity, although functionally inadequate. This seems to be a purely theoretical assumption, for it appears likely that had the fibers of the left side been displaced into the right pontal area, then this right half should have shown a definite increase in the number of pyramidal fasciculi, for it would have contained not only the fibers normally present, but those contributed from the left half. This should have been apparent to the naked eye on cut surface, yet no mention was made of such an observation. On the other hand, what has become of the transverse pontal fibers of the left half, which, it will be remembered, were entirely absent; and why were there no cerebellar symptoms pointing to their apparent destruction? Unfortunately no sections were made from the middle cerebellar peduncles and no evidence was adduced to account for the absence of the left pontal fibers. Furthermore, if this idea of displacement without anatomical interruption or other evidence of histological changes in the fibers be correct, why were the symptoms confined to the pyramidal system; none from the pontal fibers in the very heart of the tumor; and the whole symptom complex of only two months' duration? All of this may be due to pressure changes; yet why were there no pressure symptoms during the process of displacement, for surely the tumor did not attain such dimensions, push all the fasciculi to the right side and destroy the left pontal fibers in only two months.

In Davis' (3) case, for instance, there was found a glioma of the left frontal region, measuring 11 x 9 x 6 cm., which had pushed the thalamus, caudate nucleus and internal capsule to the right and posteriorly. The symptoms, which were "very slight,"

were of only two months' duration. Of course, this may be explained in two ways—one may say it was a very rapidly growing tumor or else it was a more gradual process which, after reaching certain dimensions, began to exert pressure changes, and that the first symptoms were evidences of this beginning pressure, which in two months attained such proportions as were found post-mortem. But evidently a tumor of the frontal region would have to attain considerable size before producing the displacement found in this case, and if size be any indication of chronicity, must have existed for some time. What, then, was the condition of affairs during the incipient stage? Surely there must have been some pressure exerted, and Marinesco and Minea (4) have shown that even very slight pressure of the shortest duration experimentally produced is sufficient to cause definite histological changes in the nervous system. Why, then, were the symptoms delayed until such marked displacement occurred? No report was made upon the spinal cord or the internal capsule.

Other cases might be reviewed in which there have been marked evidences of pressure changes, but they have been so incompletely studied from a pathological point of view that an abstract of them is scarcely worth while. In all the usual occurrence of a large tumor and relatively few symptoms were observed, but no report was made upon the condition of the nerve fibers involved by the new growth.

While it is not my intention to deny the occurrence of decided pressure symptoms and evidence of displacement in gliomata, it does not seem that such facts satisfactorily account for all the conditions observed. The objections, then, to such an explanation are: First, the failure to demonstrate that all the fasciculi are "pushed aside"; second, that it does not account for the absence of symptoms during the earlier stages when the infiltrating cells are in intimate contact with and no doubt exerting some pressure upon individual fibers; and lastly, it is thoroughly inadequate, in those cases where the entire pons or internal capsule shows no normal fasciculi upon macroscopic examination, nor any evidence of displacement.

The second and more widely accepted view rests upon the infiltrating nature of gliomata and the presence of medullated fibers in the tumor substance. Such observations led to the con-

clusion that the persistence of function and absence of degenerative changes below the lesion were due to these retained nerve fibers which passed through the tumor without interruption.

Sir William Gowers (5), in writing of gliomata, says: "Some infiltrate without displacing the cerebral substance, others displace rather than invade. From their infiltrating character they usually cause simple enlargement without displacement or compression of adjacent parts," and "sometimes nerve fibers persist and retain their conducting power in a part which is almost entirely infiltrated with the new growth." This seems to be the position taken by the majority of investigators who have demonstrated the presence of nerve fibers in gliomatous tissue. However, the conclusion that the fibers pass through without interruption does not appear to have been definitely proven, since most of the observations were made from small fragments of the tumor without any report upon the region above or below the new growth. Although one might find a few scattered fibers in a single portion of a tumor this is not sufficient to prove that they pass through as continuous neurones, for sections made from a greater depth in the same area or from the central portion of the tumor might show an entire absence of fibers, and no case was reported in which the entire neoplasm had been sectioned. Furthermore, it is a common observation that the usual medullary stains reveal a decreasing number of fibers from the periphery toward the center, while certain gliomatous areas show an entire absence of medullated fibers.

Bassoc's (6) monograph is interesting in this connection. In one of his three cases there was a large glioma of the left temporal and occipital lobes. The tumor was quite vascular and contained hemorrhagic areas with softening and necrosis. There was no mention of displacement of surrounding parts. The Walters-Kaes myelin stain showed numerous medullated fibers "passing through" the tumor. No degeneration was found in the spinal cord. Stain not mentioned; presumably the Walters-Kaes method was used. It is not quite clear as to what the author means, when he says numerous fibers were "passing through" the tumor. If he intends to convey the idea that they were passing through that portion of the tumor he examined, the point is quite admissible. On the other hand, if he takes the position that, since fibers were found in the tumor and no degen-

eration was observed in the spinal cord, because of this fact, then it seems that the deduction is insufficiently proven, for one would not expect to find secondary spinal degeneration from a lesion confined to the temporal and occipital lobes.

Although these observations are extremely suggestive, the number of medullated fibers, which can be demonstrated by the usual myeline stains, are so few that provided they did retain their continuity, their number is not sufficient to account for the functional persistence and absence of degenerative changes in associated areas.

Attention was next directed to the axis-cylinders. A great deal of work has been done upon the intra-cellular fibrils in a variety of normal and pathological conditions, while surprisingly little attention has been paid to the extra-cellular fibrils of the axis-cylinders. The first contributions appeared simultaneously by Bartels (7) and Bielschowsky (8), both of whom studied the condition of the axis-cylinders in multiple sclerosis, using the Cajal and Bielschowsky methods. They found everywhere in the sclerotic areas a surprising number of axis-cylinders of normal direction and appearance. Later, Raubetschek (12) in studying a tuberculoma of the spinal cord by Bielschowsky's method was able to demonstrate the presence of axis-cylinders in the diseased area, but made no report upon the conditions above or below the lesion, nor did he use the Weigert method. All this, naturally, led to some speculation concerning gliomata. Strobe (13) had already shown the presence of medullated fibers in gliomata to be a fairly constant feature; that they increased in number from the center towards the periphery and frequently showed marked degenerative changes. Their number, however, was entirely too small to explain the marked functional persistence, and in order to be consistent, it was commonly held that a great many more fibers could be demonstrated with a reliable axis-cylinder stain.

Bielschowsky (9) had already produced the required stain in 1902, and to him also belongs the credit of having first applied it to the study of gliomata, for in 1904 (10) appeared his first article upon the axis-cylinders in a glioma of the pons. The Weigert preparation showed a number of medullated fibers at the periphery of the tumor, while there were only a few fragments in the center. The author's silver impregnation, however,

revealed a great many axis-cylinders in all parts of the tumor. These were considered as persisting fibers and resembled very closely those found in multiple sclerosis.

The following year or so was marked by a lively interest in the extra-cellular fibrils and they were studied in a variety of conditions, such as carcinoma, sarcoma, areas of compression and gliomata; and were found to be present in each case in variable numbers, and in all stages of histologic preservation.

In 1906 appeared another communication by Bielschowsky (11) in which he studied two more gliomata. The first tumor was situated in the left frontal lobe, had advanced upon the corpus striatum, and contained in its posterior portion a few small hemorrhages. Duration—two years. Sections were cut so as to include both center and periphery of the tumor, that is, radially to its center. The technical methods used were hematoxylin and eosin, Van Gieson, Wiegert, the author's silver impregnation and Benda's glia stain. To the unaided eye the Weigert preparation showed a marked difference between the center and the periphery; the center was golden yellow, while the periphery was dark blue from the presence of numerous medullated fibers. The contrast, however, was not so striking when examined microscopically, and the central portion showed several pale, swollen medullated fibers of irregular contour and many myelin droplets. In the silver impregnation the whole section stained more uniformly and the transition from center to periphery was quite gradual. Microscopically, there were decided histologic changes in the axis-cylinders, considered by the author to be regenerative in character.

In the second case the tumor was situated in the left temporal lobe and extended into the inferior horn of the lateral ventricle. The new growth was quite vascular, contained a small hemorrhage in the center, and numerous fibers from the surrounding brain tissue could be seen radiating towards its center. The microscopic findings were practically the same as in the above case except for the intimate relation of the new fibers to the blood vessels.

In neither case was any report made upon the spinal cord, and the author's attention was more fixed upon the regenerative processes than upon the possibility of anatomical continuity.

Since these studies were published the interesting work by

Herxheimer and Gierlich (14) on neuro-fibrils has made its appearance. The authors have employed Bielschowsky's silver method in normal and pathological conditions with most excellent results. Two gliomata were examined by them, but in both cases the tumor alone was studied. Sections were made from the center and the periphery. The results were practically the same as were found in Bielschowsky's studies except that the axis-cylinders were more nearly normal. It was also observed that in the hemorrhagic and necrotic areas the fibrils were greatly diminished or entirely absent.

While such studies leave no doubt that in these conditions nerve fibers may be found in far greater numbers by a satisfactory axis-cylinder impregnation than by any of the myelin stains, or the usual axis-cylinder stains, it does not appear to be demonstrated that these fibers pass through the new growth without interruption.

Thus it was that my studies were undertaken in order to confirm the result already obtained and to demonstrate, if possible, the continuous course of the persisting fibers.

In all, five gliomata were studied. Three are situated in the left cerebral hemisphere, the fourth in the right hemisphere, and the fifth in the pons and medulla. In each case a small piece of tissue was taken from the center of the tumor, and cut by the freezing method into sections varying from ten to fifteen microns each. All sections from each tumor were cut from the same block of tissue. The staining methods used were: hemalum-acid fuchsin, Weigert's and Bielschowsky's silver impregnation for neuro-fibrils.

In the first case the tumor is located in the left occipital and temporal lobes, and measures eight centimeters in its antero-posterior diameter. There are several small hemorrhages scattered throughout and the blood vessels are numerous. The internal capsule is apparently normal. A small piece of tissue was taken from the center of the tumor and from the entire posterior limb of the internal capsule which was divided into anterior, middle and posterior thirds. Sections from each specimen were stained by the three methods employed.

*The Tumor.*—Hemalum-acid fuchsin showed an extremely vascular tissue made up of cells with round and oval nuclei, and many neuroglia fibers. No nerve fibers are observed in any part of the section.

*Weigert Section.*—The cellular and vascular characters can still be recognized, and a few swollen, beaded, medullary fragments can be seen (Fig. 1). In the center of the section, where the nerve fibers seem to be least numerous, twenty-seven fragments were counted. Oc. 1. Obj.  $\frac{2}{3}$ . Whereas, if the  $\frac{1}{6}$  obj. were focused on the same area no medullary fragment could be seen. At the periphery of the section numerous medullary fibers are observed with each magnification.

*Bielschowsky Section.*—The character of the tissue can still be discerned and many axis-cylinders are seen in all parts of the section (Fig. 2). In that portion of the section which showed the least number of fibers, sixty-eight were counted with the  $\frac{2}{3}$  obj., and in the same field twenty-four were counted with

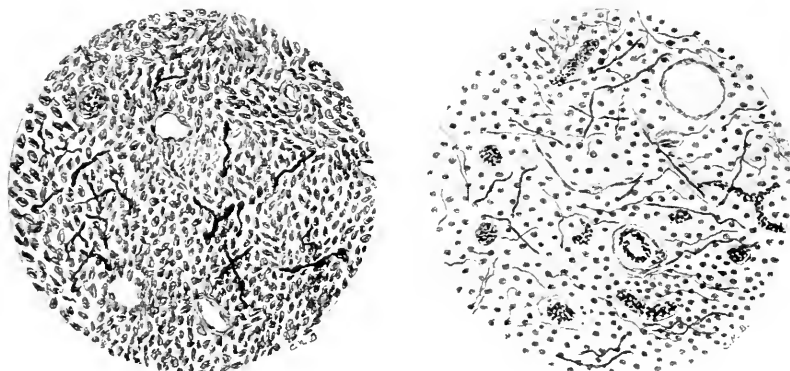


FIG. 1. Weigert preparation from substance of tumor, Case I, showing a few medullated fragments. Oc. 1, Ob.  $\frac{2}{3}$ .

FIG. 2. Bielschowsky preparation from same block of tissue as Fig. 1, showing many axis-cylinders. Oc. 1, Ob.  $\frac{2}{3}$ .

the  $\frac{1}{6}$  obj. The axis-cylinders had no definite direction, varied considerably in size, and showed decided evidences of degeneration in certain areas.

*The Internal Capsule.*—The anterior third appears to be normal by each of the three stains. The middle and posterior thirds show degenerative changes by all three methods, and a small capillary hemorrhage is observed in the posterior third, and some proliferation of the neuroglia cells. In the degenerated areas a great many more axis-cylinders are observed in the silver preparation than in either of the other two stains. The hemorrhagic area shows a complete absence of medullated fibers in the

Weigert preparation, while the silver preparation shows many fibers in this area.

Although the number of persisting fibers is comparatively small in this case, such has been the usual observation in hemorrhagic gliomata and in areas of secondary softening (14).

In the second case there is a large glioma situated in the left occipital, parietal and temporal lobes, with extension into the left cerebral crus. In its center there is an area of softening. The specimen of tissue taken from the center of the tumor was treated in the manner described and shows in each case such a marked resemblance to the one just reported that one description will

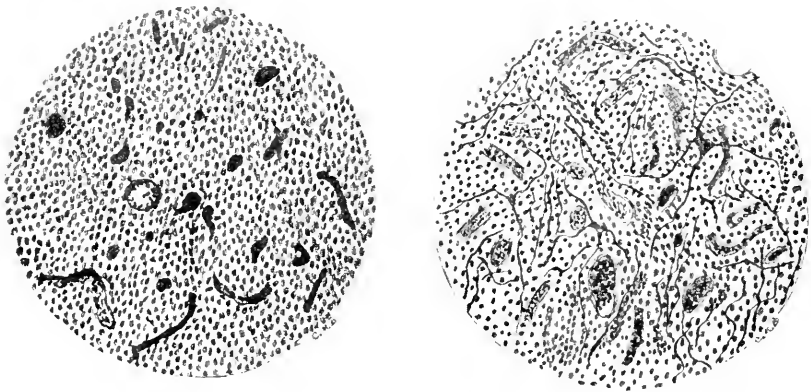


FIG. 3. Weigert preparation from substance of tumor, Case 3, showing an entire absence of fibers. Oc. 1, Ob.  $\frac{2}{3}$ .

FIG. 4. Bielschowsky preparation from same block of tissue as Fig. 3, showing numerous axis-cylinders and two ganglion cells. Oc. 1, Ob.  $\frac{2}{3}$ . No part of this section was free from fibers.

serve for both. The second tumor, however, contains a great many more axis-cylinders in the silver preparation than are found in the first case.

The third tumor involved the right occipital and temporal lobes and is quite hemorrhagic. The internal capsule and thalamus are greatly displaced to the left. The hemalum-acid fuchsin stain is similar to the above two cases. The Weigert preparation shows a complete absence of medullated fibers, while the silver method reveals a great many axis-cylinders (Figs. 3 and 4).

The fourth tumor is extremely large, is gelatinous in places, and is situated in the left cerebral hemisphere. Portions of the occipital and temporal lobes, the internal capsule, thalamus and



lenticular nucleus are involved; and there is decided displacement of the surrounding tissue. As in the third tumor there is complete absence of fibers in the Weigert preparation. The silver impregnation shows a number of axis-cylinders, most of which appear quite normal. (This case has been reported by Dr. Charles K. Mills (15), who studied it from the physiological and pathological aspects. His article also includes a gross pathological description of the tumor by Dr. William G. Spiller.)

The fifth case is a tumor of the pons. The basilar portion of the pons is considerably enlarged and presents a lobulated appearance due to the presence of a soft gelatinous growth. The tumor is more pronounced on the left side, where it measures 4.5 c.m. antero-posteriorly, while on the right side it measures only 2.5 c.m. The left middle cerebellar peduncle is involved, and anteriorly the new growth extends into the interpeduncular fossa, where it encroaches upon the left cerebral crus. The new growth in each half of the pons becomes continuous superior to the basilar artery and at the upper border of the pons completely surrounds the artery. On the left side no transverse pontal fibers are observed, while on the right side a few of these fibers may be seen where the middle peduncle enters the cerebellum. Transverse sections through the cerebral hemispheres show decided involvement of the left internal capsule and cerebral crus.

A transverse section through the middle of the pons shows no normal pontal tissue in either half, and the basal and tegmental areas are equally involved. The pyramidal fibers are apparently absent in both sides, having been replaced by extremely gelatinous and translucent tissue. The superficial transverse pontal fibers are entirely absent, while the deep fibers are considerably swollen. The left half of the pons is somewhat larger than the right, and has deflected the aqueduct of Sylvius to the right. There is no evidence of displacement in the basilar portion; but rather a condition of general enlargement. The anterior pyramids appear normal in transverse sections.

The patient was a female and had had symptoms for about one year. The optic discs were greatly swollen; there was slight ataxia; exaggerated reflexes in right arm and leg; no ankle clonus; and Babinski was positive.

A small piece of tissue was taken from the left half of the pons in an area which would normally contain many pyramidal

fasciculi. This together with a portion of the two anterior pyramids was sectioned longitudinally and stained as in the preceding cases.

*The Tumor.*—The hemalum fuchsin stain reveals the gliomatous character. The tissue is not very vascular and there is no positive evidence of nerve fibers.

The Weigert preparation shows a surprising number of



FIG. 5. Weigert stain. Longitudinal section from midst of pontal tumor, showing medullated fibers and areas entirely devoid of fibers. Oc. 1, Ob.  $\frac{2}{3}$ . Case 5.

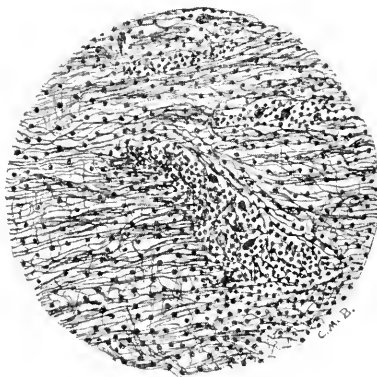


FIG. 6. Bielschowsky preparation, from same block of tissue as Fig. 5, showing countless normal axis-cylinders and a few ganglion cells. This is a fair representation of the entire section. Oc. 1, Ob.  $\frac{2}{3}$ .

medullated fibers normally directed and fairly well preserved (Fig. 5). They do not, however, extend entirely across the section and some of them are swollen and beaded. Areas are also seen in which no medullary substance is present.

The Bielschowsky section shows innumerable axis-cylinders normally directed and surrounded by the infiltrating cells. What astonishes one most is their almost perfect state of preservation (Fig. 6). The fibers are arranged in definite bundles, and numbers of them are seen extending entirely across the microscopic field. There is no evidence of fragmentation, and only occasionally do they show swelling or disintegrative changes. *No part* of the section is free from fibers. Their normal appearance is most interesting since the cases hitherto reported have all shown decided structural changes.

*The Pyramids.*—The two pyramids are so similar that one

description will serve for both. Figs. 7 and 8 represent the left anterior pyramid stained by the Weigert and Bielschowsky methods respectively. In neither case are there definite degenerative changes. The Weigert preparation, in particular, is quite normal looking, the fibers show no swelling or beading, and are present in sufficient numbers. The silver preparation, however, shows some swelling of the axis-cylinders in places. There is no fragmentation and no part of the section is devoid of fibers. A transverse section of the anterior pyramids stained by the Weigert method was studied from a preparation belonging to Dr. Spiller, which he kindly let me use. There was no degeneration in either pyramid.



FIG. 7. Weigert preparation from left anterior pyramid cut longitudinally. Case 5. Oc. 1, Ob.  $\frac{2}{3}$ .

FIG. 8. Bielschowsky preparation from same block of tissue as Fig. 7. Oc. 1, Ob.  $\frac{2}{3}$ .

For the sake of completeness and to determine whether there might be some "reaction à distance," sections were made from the right and left paracentral lobules in order to study the Betz cells. They were stained by the Bielschowsky and thionin methods. There was some central chromatolysis in the thionin preparation, though not to a marked degree, and the intracellular fibrils more disintegrating in a few cells. Considering the age of the patient and the increased cerebral pressure with probable circulatory disturbances, such observations are of little value. At any rate, the majority of the cells were perfectly normal.

The first criticism from inquiring minds will naturally be concerning the silver preparations. Are all the fibers found in

this case, in particular, really axis-cylinders, or may not some of them be neuroglia fibers, connective tissue, or even artefacts? Bielschowsky does not claim to have furnished an exclusive axis-cylinder stain, and states that in his own hands his method does impregnate neuroglia and connective tissue. The distinction, however, between these different elements is quite easily made, and it is often possible to obtain specimens in which the neuroglia fibers are not at all impregnated, a condition which was obtained in a number of my preparations. In case the neuroglia fibers are apparent, they never stain so intensely as the axis cylinders; are as a rule much smaller; have a more wavy contour; do not arrange themselves in bundles; and are not found running uninterruptedly through the entire section.

#### SUMMARY AND CONCLUSIONS

1. In three of my five cases nerve fibers were found in the substance of gliomatous tissue by both Weigert and Bielschowsky methods.

2. Two of the cases showed an entire absence of fibers, or even myelin droplets by the Weigert method, while unmistakable axis-cylinders could be seen in the silver preparation made from the same blocks of tissue. This is due, no doubt, to the greater vulnerability of the myelin sheath and its early disappearance. Thus there is certainly not a very intimate relationship between this sheath and the axis-cylinder, and Brodmann (16) maintains that there is no relation between myelinization and the formation of fibrils. Consequently, in such cases studied by the Weigert method alone, the absence of fibers in the tumor, and the failure to find degenerations in the spinal cord led to the most obvious conclusion that the fibers had been pushed aside.

3. In all five cases a great many more nerve fibers (axis-cylinders) were found by the silver method than in the Weigert preparation.

4. In the fifth case the entire pons was involved, and there was no evidence of the pyramidal fasciculi upon gross examination, yet a section from the tumor substance treated by the Bielschowsky method showed an enormous number of normal axis-cylinders; the anterior pyramids showed no degeneration in either longitudinal or transverse sections; and the Betz cells in the greater part were quite normal. Considering, then, the loca-

tion of this tumor, its long duration, the absence of marked symptoms pointing to upper segment involvement, and the microscopic findings, it seems reasonable to conclude that not only are nerve fibers retained in gliomatous tissue but that a large number persist as uninterrupted axones, passing through the tumor substance.

In conclusion, I wish to express my gratefulness to Dr. William G. Spiller, of the University of Pennsylvania, for placing the material at my disposal and for his many helpful suggestions.

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## BLASTOMYCOTIC LESIONS OF THE BRAIN<sup>1</sup>

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*Mr. President and Gentlemen:* Most of you are aware that there has been in process of birth not simply one disease due to blastomycetes but two. The affection of the skin, blastomycetic dermatitis you have probably heard most about, but because in the other affection, systemic blastomycosis, definite foci of blastomycosis have recently been found in the nervous system, your Secretary, Dr. Bassoe asked me to show you some preparations illustrating these observations. It has been my good fortune to hold post-mortem examinations upon three bodies of individuals dying of this generalized or systemic infection and I believe Dr. Bassoe has had two similar opportunities. Relatively few examinations of this sort have been made and in a number of instances the central nervous system evidently was not carefully examined, to judge by the published reports; therefore you will be interested in knowing that in two of the three post-mortem examinations I made, disseminated blastomycotic lesions were found in the brain.

Such lesions will undoubtedly be found in a considerable proportion of the systemic infections with blastomycetes if they are carefully sought.<sup>1a</sup> Krost, Stober and Moes<sup>2</sup> have reported their occurrence and previously Meyers and myself<sup>3</sup> described this large destruction of the cerebellum involving the entire outer half of the right lobe, measuring 4.5 cm. antero-posteriorly and laterally, 3.8 cm. vertically and extending to within 2 cm. of the median line (see Fig. 1). It is an irregularly shaped region the size of a pigeon's egg resembling roughly the so-called "solitary tubercle" of tuberculosis and apparently made up of agglom-

<sup>1</sup> Demonstrated before The Chicago Neurological Society, October 22, 1908.

<sup>1a</sup> According to Dr. Stober, Resident Pathologist, there will be accounts of such observations in several cases in a forthcoming collection of reports from the Cook County Hospital, Chicago.

<sup>2</sup> Jour. Am. Med. Assn., 1908, 50, 184.

<sup>3</sup> Jour. of Inf. Dis., 1907, 4, 187.

merated smaller nodules, some of which are slightly softened in their necrotic centers.

That disseminated blastomycotic nodular lesions do occur in the brain in instances of the systemic infection and may be found, as already stated, if a careful search is made, is illustrated by our experience in the examination of the cerebrum accompanying this cerebellum.

At the time this cerebellar lesion (see Fig. 1) was examined the cerebrum was sectioned in the usual manner by frontal sec-



FIG. 1. Destruction of a large part of the right lobe of the cerebellum by blastomycosis; a large conglomerate nodule.

tions averaging 2 cm. apart and the examination of the surfaces so exposed failed to reveal any similar lesions. Subsequently to the report mentioned and before discarding the cerebrum, the segments already made were further subdivided by more frontal sections so that eventually parallel frontal surfaces 6 to 10 mm. apart from end to end of both hemispheres were inspected.

This further examination resulted in the discovery of this second lesion (See Fig. 2) a small region 8 by 10 mm. in the two long diameters exposed, evidently sectioned in the middle and located mainly in the internal capsule; the section which shows this lesion passes through the middle of the corpora mammallaria. With our experience limited as it was at this time, to the large cerebellar lesion, it is not surprising that this smaller lesion was

overlooked in the customary and rather cursory first examination of the cerebrum.

That such smaller lesions of disseminated nodular blastomycosis should be carefully sought for in the brain was still more emphatically impressed upon us by the examination of the brain in the second case in which they were present, for in this instance they were more numerous, smaller and more widely scattered. A full report of the case has not as yet been published but you



FIG. 2. Posterior surface of a section through the right hemisphere illustrating the location of a nodule in the internal capsule.



FIG. 3. Posterior surface of a vertical segment through the left hemisphere 2 cm. from the anterior pole. Lesion in the white substance of the left hemisphere.

should know that the course of the disease was carefully studied, the diagnosis made early and that in other respects, especially the distribution of the lesions as they were revealed by the post-mortem examination, the disease in this instance corresponded well with systemic blastomycosis as we understand it.<sup>4</sup>

The first frontal sections of the brain in this second case, numbering seventeen and dividing the brain into eighteen segments, revealed six lesions, four in the cerebrum and two in the cerebellum, and located as follows: One 2 cm. behind the anterior end of the left hemisphere, circular in shape, 2 mm. in diameter and 2 mm. beneath the gray substance of the cortex (see Fig. 3); a second in the gyrus fornicatus of the opposite hemisphere, slightly smaller just above the corpus callosum and 7.2 cm. from the anterior end of the hemisphere (see Fig. 4); the third and

<sup>4</sup> Full details will be published in connection with Case 8, in the forthcoming volume of Reports from Cook County Hospital.



fourth about equal in size, located at the same distance from the anterior end of the right hemisphere—8.7 cm.—one in the optic thalamus and one just beneath the gray substance of the cortex (see Fig. 5), and the fifth and sixth lesions in the cerebellum resembling in some respects the large lesion first shown (Fig. 1). These cerebellar lesions (see Figs. 6 and 7), larger than any in



FIG. 4. Illustrating the size of the lesion in the gyrus fornicatus. Posterior surface. A segment made by sectioning the right hemisphere 7.2 cm. behind the anterior end.



FIG. 5. The posterior surface of a segment of the right hemisphere 8.7 cm. from the anterior end, illustrating the location and relative size of the blastomycotic nodules.

the cerebrum, are located in the posterior part of the cerebellum and centrally. One of these is 15 by 11 mm. in the longer diameters of the flat surface exposed and located in the white substance between the two dentate nuclei above the uvula (Fig. 6). When this nodule was sectioned a little more posteriorly (4 mm.) a second lesion in the gray substance of the cerebellar cortex was revealed (see Fig. 7).

After these six separate lesions were found by the seventeen frontal sections mentioned, the entire brain was further subdivided by twenty-four more frontal sections, some of the thicker segments resulting from the first sectioning being divided twice. In consequence of the added surfaces exposed eight additional foci were found. For the most part these were all small and quite superficial, located at the bottom of sulci, in the gray cortex or at

the junction of the cortex and white substance and all but two in the right hemisphere. They were situated as follows: 15 mm. behind the anterior end of the right hemisphere a nodule 2 mm. below the pia of the frontal lobe; in the section opening the very tip of the anterior horn of the lateral ventricle of the right hemisphere a nodule 1 mm. in diameter on the outer edge of the cortex of the gyrus frontalis inferior where it borders the Sylvian fissure; a nodule in the gyrus fornicatus 36 mm. behind that indicated in Fig. 4 and 3 mm. above the corpus callosum; a circular nodule 2 mm. in diameter in the gray cortex of the right

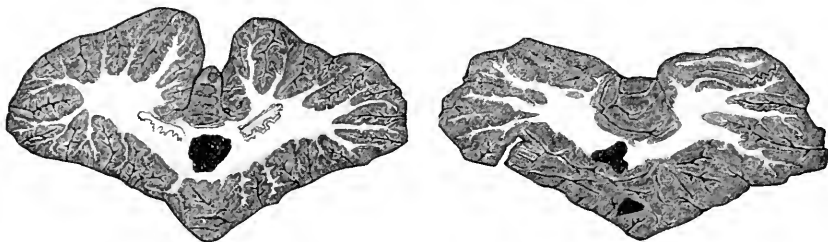


FIG. 6. Large nodule in the posterior and central portion of the cerebellum. Posterior surface of a vertically sectioned segment.

FIG. 7. Anterior surface of a vertical section 4 mm. behind that shown in Fig. 6. The lower of the two lesions is the continuation of the large lesion illustrated by Fig. 6.

hemisphere in a section bisecting the chiasma; a nodule 2 mm. in diameter, circular, just beneath the pia at the bottom of the sulcus between the gyri temporales medius et inferius; a circular nodule 2 mm. in diameter and 2.5 cm. from the surface at the junction of the gray and white substance in a section of the right hemisphere 11 cm. behind the anterior end; a nodule 1 mm. in diameter, 6 cm. in front of the posterior end of the right hemisphere at the bottom of a sulcus 6 mm. in depth extending upward from the inferior surface of the occipital lobe, and just below the posterior end of the lateral ventricle; a nodule 2 mm. in diameter 3 cm. in front of the posterior end of the right hemisphere in the gray cortex of the occipital lobe and lastly one 2 mm. in diameter 2.5 cm. in front of the posterior end of the left hemisphere at the junction of the white with the gray cortex of the outer surface of the occipital lobe.<sup>5</sup>

<sup>5</sup>The organisms are present in sections made from several of the lesions and the histological changes correspond to blastomycoses.

In their dissemination, color and occasional location in the pia these more minute blastomycotic nodules have some points of similarity to the pial miliary lesions of tuberculous meningitis. With certain features of resemblance between the lesions of blastomycosis of the central nervous system and both the large "solitary tubercle" and the minute discrete miliary tubercle, it will not be surprising if in future postmortem examinations a diffuse fibrino-purulent blastomycotic meningitis is observed in instances of systemic infection. Such a prediction seems warranted for the additional reason that the process results in a liquefaction necrosis not infrequently, the subcutaneous nodules for example developing into abscesses quite regularly.

(The drawings for which the illustrations 2 to 7 inclusively, are reproductions, were kindly made for me by Mr. Elias, by first sketching the outlines in ink, natural size, on a glass plate laid over the sections and by transillumination, transferring to paper; consequently the relations of size and position have been accurately followed.)

## A CASE OF DECOMPRESSION FOR CEREBRAL THROMBOSIS<sup>1</sup>

BY DR. J. J. THOMAS AND DR. F. B. LUND

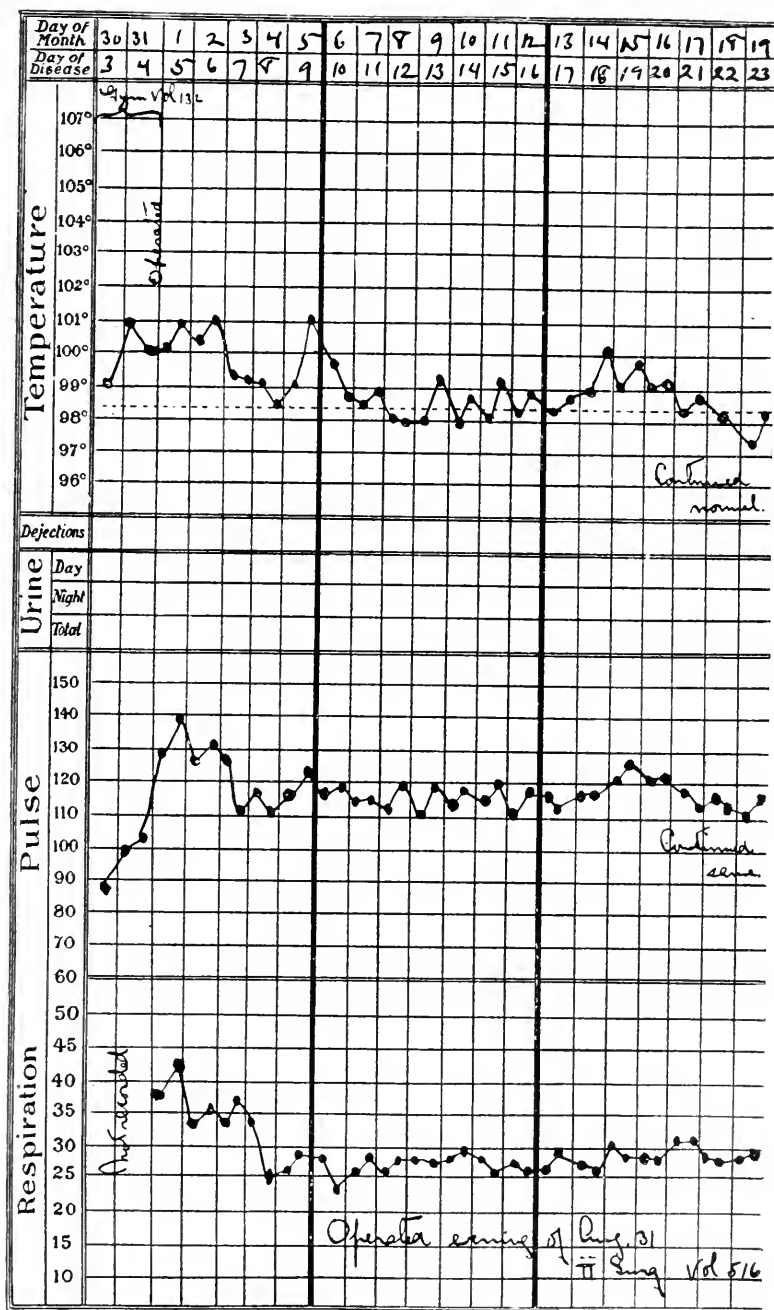
OF BOSTON

REMARKS BY DR THOMAS

The patient whose case we wish to report to you to-night was a young woman who entered the Boston City Hospital on the service of Dr. Mason, of the Gynecological Department, last summer on August 30, and whom I was asked to see in consultation the next morning.

She was a young married woman, Mrs. A., 33 years of age, who was delivered on August 28, after a normal pregnancy and a normal delivery of her sixth child. The day before she was delivered, and this was at full term, she had vomited the whole day, but had no chill, no swelling of the face or extremities, and no convulsion. The urine on the day she was admitted to the hospital, August 30, was acid, had a specific gravity of 1.014, and showed a very slight trace of albumin but no sugar, and the sediment showed a very few granular casts and a few epithelial cells. When she came into the hospital the pulse was 82 and the temperature 98.6°. Soon after her entrance a little twitching of the left side of the face was noticed. That night she had a left-sided convulsion and another one early the next morning. The morning of the 31st there was a great deal of twitching of the left side of the face and it was that morning that she was seen by me. While I was present there was a nearly constant twitching of the muscles of the left side of the face, more especially of those about the mouth, and finally a convulsion. In this the twitching began first in the muscles about the left side of the mouth, the eyes were first turned to the right and later to the left, the twitching soon spread to the left arm, and then the left leg, and then became general. In a few minutes, not more than three or four from the time the twitching began, she was

<sup>1</sup> Reported at the meeting on November 19, 1909, of the Boston Society of Psychiatry and Neurology.





again conscious and answered questions, saying that she had no pain, and protruded the tongue when asked.

On examination the tongue deviated distinctly to the left when protruded, and there was distinct paresis of the whole of the left side of the body including the face, with relaxation of the muscles, the left thigh being broader than the right as she lay in bed on the back. The knee jerks were nearly equal, the left being perhaps slightly the greater, there was no ankle clonus and no Babinski's sign, both plantar reflexes being absent. The left triceps reflex was distinctly greater than the right. The right pupil was opaque from former disease so that the relative size of the pupils could not be observed, but the left one reacted to light.

That afternoon she had four convulsions, all confined to or beginning in the left side of the face, and the left hemiplegia became complete, and she had become completely unconscious so that she could not be roused, while there were rales in both lungs and the temperature had risen. The operation for decompression which had been advised by me in case the condition became critical was decided upon, and was done that evening by Dr. Lund, and was done without ether as the patient was so deeply unconscious.

After the operation there were two general convulsions and several slight ones involving the face alone, that night and the next day. The next morning she was conscious and rational. I saw her again on Sept. 2d and at that time there was left hemiplegia with no voluntary motion, but no Babinski's sign, and no definite increase of the reflexes. She was conscious and answered questions rationally and promptly. After the first day following the operation there were no more convulsions, and recovery was uninterrupted, except that the temperature remained slightly elevated for a time, probably due to foul lochia. On Sept. 11th the left side of the face was still parietic and the strength of the left leg had improved so it was fairly good. There was marked protrusion of the brain through the opening in the skull, which persisted for some time. She was finally discharged from the hospital with no evidences of a hemiplegia, nor was there any distinct disturbance of sensation or of the stereognostic sense.

Through the kindness of Dr. Rowen we have been able to

learn of the further progress of the case. After the woman returned home she was weak, but gained slowly for some weeks when she had a severe convulsion. At first uremia was suspected, but she improved again, and after a time this was repeated, so that it seems probable that the destroyed area of the brain acts to produce convulsions that are epileptic in nature, an organic epilepsy.

It seems to me that this operation of cerebral decompression for vascular lesions of the brain is one the suitability of which in various cases is still uncertain, as we do not know as yet the indications and contraindications for it. At present my own feeling in regard to it is that in view of the fact that so many of these cases recover without operation, it should be reserved for those in which we feel reasonably certain that the outcome will be fatal without interference, and that in these cases we may be able to prevent the fatal outcome is I think shown by such a case as this one reported by Dr. Lund and myself, and from the cases reported by Dr. Cushing, provided that the actual destruction of brain tissue is not too great. Perhaps one reason for the greater fatality in operations of decompression in cases of cerebral hemorrhage than in those of thrombosis, judging from recent work that has been done upon the etiology of shock may be that in the cases of hemorrhage there is apt to be more extensive destruction of nerve fibers.

#### REMARKS BY DR. F. B. LUND

We are always aware that in the treatment of chronic disease of the brain—by which I mean chiefly tumors—we often meet with discouragement and disappointment. The case in which we are able to remove a tumor is a rarity and the case in which no disability is left behind after removal is a still greater rarity.

Cerebral decompression in tumor has its distinct indications and is well worth doing, but at the most it can usually promise only temporary relief from pain and blindness. After it is performed we have to watch our patient go from bad to worse, losing one faculty after another until death mercifully ends the scene.

On the other hand, a very recent development of cerebral surgery has been that of decompression for acute conditions. If in a condition, either pathological or traumatic, attended by tem-



porary edema of the brain, we can perform decompression, it may be our good fortune to save our patient's life and to save him in a condition in which he may be a useful member of society. Cerebral decompression in acute conditions seems to me at present the most hopeful department of surgery of the brain.

The case which Dr. Thomas has reported is the case in question. He has given you the symptoms and the history of the case. He saw her on the morning of August 31 and as she grew steadily worse during the day, I was asked to see her in the evening. When I saw her she showed complete flaccid paralysis of the left arm and leg, with constant spasm of the left side of the face and neck, and turning of the head to the left. She was completely unconscious, with stertorous respiration, and rapidly growing worse. I immediately proceeded to operate without an anesthetic and during the rather extensive procedure no sign of feeling was manifested by the patient. A large semicircular incision was made on the right temporal region, exposing the greater part of the squamous portion of the temporal bone, extending upward on to the parietal bone, forward as far as the coronal suture and backward as far as the posterior border of the ear. As the patient's condition was so desperate I did not stop to split the temporal muscle, but scraped it back with the skin flap. By removal of a trephine button and the use of rongeur forceps an area of bone nearly as large as the palm of my hand was removed. Upon opening the dura in a line following the bone incision, the pia was found to be edematous, the convolutions showing slight, if any, yellowish discoloration and the brain bulging through the opening to a marked extent. The pulse at the beginning and close of the operation was about 130. After removing this area of bone the dura was left open and the scalp stitched carefully back into place, a portion of the temporal muscle also being brought back and attached to the occipito-frontalis aponeurosis.

The next morning the patient could answer questions and, as Dr. Thomas has told you, she had only two convulsions after the operation. In the course of about eight days her paralysis had disappeared. She was up and about in a little over two weeks and is now at home doing her housework. During the first few days after the operation the hernial bulging was more marked, then it began to gradually subside, and I am told that there is very little left of it at present.

The history and symptoms leave little doubt that the case was one of cerebral embolism and I have no doubt that all who saw the case with me felt that without operation the result would have been fatal. The recovery of this patient is certainly one of the most satisfactory surgical experiences that I have ever had, and I feel that whatever credit there is in the case is due to Dr. Thomas on account of his diagnostic skill and alert recognition of the surgical possibilities of the case.

Only a short time before operating upon this case I was called into the country to see a patient suffering from cerebral hemorrhage and moribund. He was sixty years of age and his physician requested me to do a decompression and if possible incise the brain and allow the blood clot which was causing the trouble to escape. He stated that he had attended Dr. Cushing's clinic and had seen this operation performed and felt that it gave the patient his only chance of life. Judging from the man's condition which was worse than that of the patient in the case just reported, I felt that he would probably die during the operation, and also that if he should survive he would probably suffer during the remainder of his life from hemiplegia on account of the destruction of motor fibers in the internal capsule. I therefore presented the matter to the family in such a light that they did not care to have the operation done, nor could I urge its performance.

Since then I have had the pleasure of talking over with Dr. Cushing the general subject of trephining in acute conditions—thrombosis, embolism and hemorrhage. He tells me that he has several times decompressed in cerebral hemorrhage, incising the cortex, whereupon the clot is exuded by intracerebral pressure. The operation is a difficult one. There is great congestion and the patients upon whom he has done the operation have died of pneumonia. He does not feel that the operation at present should be attempted except by those who have given the subject special attention and who are especially skilful.

Dr. Cushing states in a recent article that he has performed decompression in cerebral embolism five times successfully and has also successfully operated by decompression for the cerebral edema of Bright's disease. While therefore the advisability of operating in cerebral hemorrhage with the idea of removing the clot may still be said to be sub judice it seems to me there can

be little doubt of the propriety in skilled hands of cerebral decompression in embolism or other acute conditions producing cerebral edema. Dr. Cushing's well-known work on "Subtemporal Decompression in Basal Fractures" also should extend our operative indications in those conditions. I cannot but feel that the case here presented points toward a considerable extension of the field for cerebral decompression, and that in these acute conditions are to be found perhaps the most favorable indications for cerebral surgery. I do not mean that I am discouraged as to operating for brain tumor. Operation at the present time is our only resource in that condition, and an occasional brilliant success will justify many discouragements and defeats. I believe that this work should be persisted in, but that, as stated above, decompression in acute conditions causing cerebral edema will perhaps give us a larger percentage of favorable results than the same operation in tumors of the brain.

## Society Proceedings

The President, DR. J. W. McCONNELL, in the Chair

October 23, 1968

PHILADELPHIA NEUROLOGICAL SOCIETY

*(Continued from p. 110)*

### PSEUDO-BULBAR PALSY

By J. Hendrie Lloyd, M.D.

J. Hendrie Lloyd read a paper on pseudo-bulbar palsy, embodying the report of a case which had occurred in his wards in the Philadelphia Hospital. The patient was a young man under 30 years old, who after successive paralytic strokes, extending over a period of several years, and involving both sides, was left with complete paralysis of the lips, lower face, lower jaw, tongue and some of the muscles of phonation and deglutition. Speech was impossible, the patient having a complete anarthria, although he was not properly spastic. Ingestion of food was only possible by introducing the substances to be swallowed far back in the pharynx. The patient had the peculiar automatic laughter seen sometimes in pseudo-bulbar palsy. The autopsy revealed bilateral lesions in the lenticular nuclei, in such position as possibly to involve the motor fibers at and just behind the knee of the internal capsule. The patient had not been either hemiplegic or diplegic, although in some of his paralytic strokes the arms and legs had been temporarily affected.

Dr. Lloyd discussed the pathology of these cases, and pointed out that the lesions must be in such a position as to cut off the upper order of neurones, and they must also be bilateral. Most of the reported cases have shown lesions in the lenticular nuclei.

Dr. C. K. Mills said the case was interesting in connection with the study of the functions of the lenticular nucleus, a subject which is still in much obscurity. He was inclined to give assent to the theory of von Bechterew as to centers for forced movements in the thalamus, these being connected with the cortex through the lenticula and anterior limb of the internal capsule. In several reported cases among those which he and Dr. Spiller collected, and one or two studied by them, lesions of the lenticular nucleus were present with spasmodic or involuntary laughter or weeping. There were probably separate centers in the lenticula. The lenticular nucleus is probably subdivided in a manner similar to the cortex, in regions which have particular relation to the functions of motility. In one region of the lenticula, in other words, a destructive lesion will cause a form of the glosso-labio-laryngo-pharyngeal syndrome, while in other regions lesions will produce disorders of motility in the leg, arm or face. The paralysis is not of the same permanence as that from

lesions of the internal capsule. Dr. Mills was especially interested in one of the clinical phenomena reported by Dr. Lloyd in this case, the athetoid movements in the arm. In several cases reported a peculiar athetoid or choreoid movement has been present in isolated lesions of the lenticula. It would seem that the paralysis or paresis which is due to lesions of the lenticula disappears in part; it will be seen not to disappear altogether if the cases are sufficiently carefully studied. In other words, a residuum of paralysis will be found even late in such cases.

Dr. T. H. Weisenburg stated that in 1904 he wrote the first paper on pseudo-bulbar palsy published in this country. In this he reported three cases with necropsy and four without. Since then he has seen many such cases and he thought they were quite common. It was his opinion that a great many cases which were reported as pseudo-bulbar palsy were really cases of diplegia, and he thought that a differentiation could be made between them. So far as pseudo-bulbar palsy is concerned he thought that a differentiation could be made in those cases in which there were involuntary laughing and crying, and those in which this did not occur. In all the cases he had studied he found bilateral multiple areas of softening, this agreeing with the results of his former study.

Recently, in association with Dr. Ingham, Dr. Weisenburg has studied some of the unusual phenomena of pseudo-bulbar palsy, and was especially interested in the respiratory and bladder disturbances, and he came to the conclusion that there is really no such a thing as a respiratory center in the cortex or a center for the bladder functions. The results of this study will be further incorporated in a paper.

Dr. Spiller said that the case that Dr. Lloyd and Dr. Ludlum reported was a typical one of pseudo-bulbar palsy. The absence of secondary degeneration does not mean that the lesion has not destroyed a certain number of fibers of the internal capsule, as the destroyed fibers may be so few that their destruction does not cause proliferation of neuroglia, and by neuroglial proliferation we usually judge of secondary degeneration. He alluded to a recently reported case, by Long, of extensive lesion of the motor part of the brain with comparatively little secondary degeneration. The specimens Dr. Weisenburg reported in his paper were from the Laboratory of Neuropathology of the University of Pennsylvania. One case was extremely interesting and had been in Dr. Spiller's service repeatedly. The patient had been in great danger of choking to death in eating, and saliva dribbled from his mouth. Dr. Spiller called attention to the fact that lesions in pseudo-bulbar palsy are not always in both cerebral hemispheres, but that one or more may be in the pons. He has seen many examples of pontile softening, always unilateral from one occlusion. This is caused by occlusion of one of the blood vessels from the basilar artery, as these supply one or the other side of the pons, but apparently no one vessel supplies both sides.

Dr. D. J. McCarthy said that Dr. Lloyd's case was under his care, as well as Dr. Dercum's in the Blockley service. Paralysis of mastication and paralysis of lips were complete in this case. Most of the cases of pseudo-bulbar palsy exhibit partial loss of power, but in this case the tongue lay absolutely flat in the mouth, the mouth was wide open, and when the man wanted to swallow he had to push the food back in the mouth, in this respect absolutely differing from any other case Dr. McCarthy had ever seen.

Dr. Dercum said that Dr. Weisenburg's remarks as to the absence

of special centers in the cortex are very suggestive. The striated body is possibly to be considered as a submerged portion of the cortex. It is practically the only representative of the cerebrum in reptiles and birds. The pallium attains a very imperfect development in the latter so that fundamental functions—such primal acts as the taking and swallowing of food—probably have a representation in the striated body. Perhaps, too, the mechanism of laughter has a similar representation. Further the facts of anarthria suggest that the striated body has some function of coordination. We should remember in this connection also that the original case of athetosis of the elder Hammond revealed at the autopsy, made many years later by his son, lesions in the striated body.

Dr. Lloyd said that there were two groups of speculators on this subject. There are those who claim that the lenticular nucleus is nothing but a pathway for fibers to pass through, and that it is not in itself an independent center. Dejerine appears to hold that a case like this is due to interruption of fibers at or near the knee of the internal capsule.

Others claim that the lenticular nucleus is an independent coordinating center in itself. This seems to have been Marie's idea when he said that motor aphasia is merely an anarthria plus a sensory aphasia; but the trouble with that theory of Marie's is that in ordinary motor aphasia there is no true anarthria, as in Dr. Lloyd's case. His patient had a complete paralysis of the muscles of the lips, tongue, lower jaw, and even of some muscles of the larynx, a condition which is not seen in motor aphasia.

Dr. Lloyd said that he had not much confidence in the mere gross inspection of these lesions, because the damage and interference with function during life may be much more extensive than appears from a post mortem examination. The cortical centers for all the affected muscles in this case lie very close together, and their motor fibers probably pass down through the capsule close together also; therefore, it is not inconceivable that a limited lesion in the lenticle might just involve the comparatively small bundle of motor fibers in the internal capsule.

Dr. Lloyd was not prepared to offer any theory himself in explanation of the automatic laughter.

#### ADIPOSIS DOLOROSA—A CONSIDERATION OF ITS DIAGNOSIS AND PATHOLOGY, WITH REPORT OF AUTOPSIES

By G. E. Price, M.D.

A report of two typical cases of adiposis dolorosa from the service of Dr. Dercum at the Philadelphia Hospital, being the sixth and seventh to be recorded with autopsy. They were both females, aged 48 and 57 years, respectively, and presented nothing unusual in their clinical history.

The pathological findings in Case 1 were: Inflammatory changes in the thyroid with marked increase in the connective tissue of one lobe, the other showing compensatory hypertrophy; also inflammatory changes in the hypophysis together with a condition resembling adino-carcinoma. The ovaries were sclerosed, and there was present an interstitial and parenchymatous neuritis of the terminal filaments. In Case 2 the thyroid was somewhat enlarged, with increase of the connective tissue and dila-

tation of many acini with occasional infoldings or plications of the lining epithelium. The hypophysis presented changes similar to those found in Case 1, but less marked.

The probability of the hypophysis contributing to the symptomatology of adiposis dolorosa through perversion of its function, was emphasized; also the fact that both the thyroid and pituitary were influenced by such toxic and inflammatory processes as alcohol and syphilis.

Drs. Price and Hudson reported from the orthopedic and neurological departments of the Jefferson Hospital a case of Dercum's disease presenting the typical symptom group, and also showing arrest of development of the ribs and dorsal vertebræ. The report was accompanied by a radiogram.

Attention was called to the probability of the hypophysis being an etiological factor in both of these conditions.

#### A CASE OF ADIPOSIS DOLOROSA WITH INVOLVEMENT OF THE LARGE NERVE TRUNKS

By P. N. Bergeron, M.D.

Dr. P. N. Bergeron reported an unusual case of adiposis dolorosa with involvement of the large nerve trunks, in a woman 45 years of age. The patient's father had been a chronic alcoholic. The patient never used alcohol nor could a history of syphilis be elicited.

She suffered from an attack of influenza at the age of 35 years. From her thirtieth year to the onset of the attacks she frequently had paresthesia of the hands. The menopause occurred prematurely at the age of 37 years and was followed in a few years in a gain of 45 pounds in weight. The disease began three years before. Besides presenting all the symptoms common to this affection the case is an interesting one in that it is characterized by three unusual features: (1) The comparative absence of circumscribed masses of fat, there being only four present; one about each elbow bursa, and two in the region of the metacarpo-phalangeal joints of the right hand. (2) The extreme sensitiveness of the entire subcutaneous adipose tissue; and (3) the marked pain that could be elicited on pressure over the large nerve trunks. Marked improvement resulted from the use of thyroid extract.

#### NOTE ON A CASE OF ADIPOSIS DOLOROSA IN WHICH THERE WAS PRESENT ALSO SPASTICITY AND CONTRACTURE INVOLVING THE EXTREMITIES

By F. N. Dercum, M.D.

Contractures and adhesions of the fingers have occasionally been noted in adiposis dolorosa as, for example, in one of the early cases described by the writer. Extensive contractures, however, have not been noted. The present case is as follows:

M. D. T., white, female, age 36, single, American, and a clerk by occupation, was referred to Dr. H. A. Wilson at the Jefferson Hospital for an opinion, February 5, 1908. Later Dr. Wilson transferred her to Dr. Dercum's care.

*Family History.*—Father dead. Cause not known, but thought to be some form of lung disease; died at the age of 43. Mother living, aged 70; suffers from rheumatism. One brother died of an accident. One sister died at age of 44 from "acute indigestion." No history of nervous, cardiac, renal or malignant disease in family.

*Personal History.*—Has had none of the diseases of childhood excepting measles. At the age of two and one half years, the patient says she had "brain fever." This left her with a running ear which persisted for eleven years. Had a left-sided croupous pneumonia thirteen years ago; made a good recovery. At the age of sixteen had an attack of iritis which lasted about two weeks and ended in a good recovery. About nine years ago she had an attack of gastritis which lasted about three weeks; no trouble with stomach subsequently. About sixteen years ago patient had a fall, striking the sacrum; two years later an abscess developed which was opened and drained and healed in about two weeks. Six years ago patient fell striking the head about the occipital region; she did not lose consciousness but says that she was somewhat dazed. About three months after this she noticed a numbness in the fingers, was unable to pick up small objects; this gradually became worse, and later could not recognize objects handled. Pain and temperature senses appeared to be normal.

About three years ago she noticed difficulty in walking. Her ankles were weak and would give way. Subsequently the weakness involved the legs as a whole and there was finally, about June, 1907, complete loss of the ability to walk. From that time on the legs have been more or less stiff. About the same time the arms also became somewhat stiffened. Has been confined to her bed ever since. The loss of power was first noticed in the right leg. About three months afterwards it made its appearance in the right arm, some three or four months after this in the left leg and after about a like interval in the left arm. The patient states that she has always been stout, though her obesity has increased much of recent years.

*Present Condition.*—The patient is a very obese woman, the fat being distributed in a diffuse manner over the trunk, upper arms, hips, buttocks and thighs. There is but little fatty deposits over the forearms and lower legs and none over the face, hands and feet. The fat is everywhere tender to pressure. Pain and tenderness are especially marked in the fatty deposits over the trunk, more especially over the back and lumbar region. The fatty tissue of the arms and forearms is also painful, more especially upon the right side. Similarly, pain and tenderness are noted in the thighs, in the fatty deposits over the knees and over the legs. It also, as in the arms, is more marked on the right side. Spontaneous pains frequently make their appearance in the back of the neck, and less frequently in the fatty deposits over the trunk and in the extremities.

The fatty increase seems to be uniform and diffuse. Separate lipomata cannot be outlined in the fatty mass. The patient states that three years ago pain began, beginning in the groin and extending down the right thigh and leg to the ankle. It was more severe anteriorly, and her flesh now became very tender, especially at times. Similar pains were also noticed in the arms, associated with tenderness in the skin. Occasionally the pains would come on suddenly and would, as she describes it, be jerky in nature. She noticed also that her flesh began to bruise



very easily. Black and blue marks would form from slight causes. As in typical *adiposis dolorosa*, the symptoms were most marked in the trunk and in the proximal segments of the limbs while the face, hands and feet were free. Further the case was an instance of the diffuse form of the affection.

The thyroid gland cannot be outlined, either its isthmus or its lobes, although the deposit of fat is moderate in the neck. The examination of the urine was negative. Examination of the blood also failed to reveal any fact of moment.

In addition, the following conditions are noted. The patient is unable to stand save with assistance. Both legs are quite spastic and the feet are in the position of extension. In both hands the fingers are flexed and the patient is unable to extend them. The right arm is somewhat spastic both to flexion and extension at the elbow. Movements of the shoulder are also impaired. Forearm and hand are held in pronation. The wrist is semiflexed upon the forearm while the fingers and thumb, as just stated, are flexed upon the palm. Voluntary movement is but slightly impaired at the shoulder, is markedly impaired at the elbow and almost lost at the wrist and fingers. Flexion and extension is feeble at the wrist and none of the fingers can be moved except the little finger which can be extended. The left arm presents similar conditions save that the movements both of the shoulder and elbow are less impaired and the patient can also flex and extend the hand at the wrist better than on the right side and there is also some power of flexion and extension of the thumb and fingers.

Both lower extremities are held in the position of extension. The patient can, with great effort, slightly flex the right leg upon the thigh but is unable to make movements of the foot at the ankle. She can flex the left leg and thigh better than the right and can also slightly flex the left foot. As the patient lies in bed, both great toes are over-extended. Especially is this true of the left. The toes of the right foot can be very slightly moved, the toes of the left foot can be moved a little more. The biceps- and triceps-jerks are plus in both arms and this is also true of the wrist-jerks. The knee-jerks are both exaggerated. A persistent ankle clonus exists upon the right side while a disappearing ankle clonus is elicited upon the left side. A prompt Babinski response is obtained upon both sides.

There is no involvement of the face. There are no facial inequalities. Angles of the mouth are retracted equally well and the palpebral fissures are equal. No areas of anesthesia or hypesthesia can be discovered anywhere, save perhaps in a small area on the inner aspect of the right arm above the elbow where sensation appears to be slightly diminished. Possibly in keeping with the painful condition of the fatty tissue, the patient reacts excessively to sensory tests made over the back or other portions of the trunk.

No muscular atrophy can be discovered. Patient has perfect control over the sphincters. There is a history of chronic constipation. Girdle pains were never noted.

Aside from the mechanical difficulties of movement, the patient was excessively weak. Mental depression also existed, though not as marked as it is frequently seen in *adiposis dolorosa*. The four cardinal symptoms of the affection, that is, the excessive fatty deposit, the pain, the asthenia and the mental symptoms were present.

Examination of the eyes shows that the pupils react promptly to direct and indirect light stimulation and also to accommodation. The ocular movements are unimpaired and the visual fields show no contraction. Media clear, optic discs are of good color; retinal arteries and veins are of normal color and size.

The patient remained under observation until February 27, 1908, when Dr. H. Augustus Wilson performed a subcutaneous tenotomy of the tendo-Achillis on both sides with the result that some two months later the patient was able to stand with assistance and to be about in a wheeled chair with comfort.

That the patient, whose case has here been placed on record suffered from a diffuse form of adiposis dolorosa, there can be no doubt. That cord changes, that is, a lateral sclerosis was also present, is a logical inference from the symptoms presented. Whether in this case a lateral sclerosis merely occurred in a patient suffering from adiposis dolorosa or whether there was an etiological relationship between the two affections, the facts do not enable us to decide.

Dr. Dercum said he wished to speak of the name Adiposis Dolorosa which has been widely accepted. German writers substitute the word "adipositas" for the word adiposis. Adiposis has been used by English writers for several generations in spite of the objection that it is a hybrid word compounded of both a Greek and a Latin root. Properly speaking, all parts of a word should be derived from roots from the same language. At the same time usage has confirmed the word adiposis, just as it has confirmed other hybrid words freely used by German as well as by English writers, such as "terminology." Further, adipositas, while derived from roots both of which are Latin is also an artificial—a *made*—word. Not a single Latin writer ever used it. Indeed the proper Latin word is "obesitas" and if we were to take the attitude of purists, we ought to say obesitas dolorosa and not adipositas dolorosa.

### A CASE OF HUNTINGTON'S CHOREA

By Eugene Lindauer, M.D.

J. Z., white, male, 43 years old, born in the United States, bridge builder. His father developed a tremor after a fall, and had to be committed to an insane asylum, where he died at the age of 64, several years after the onset. Family history otherwise negative. Patient at the age of 31 fell a distance of 50 feet to the ground; he struck the right side of his forehead. He was paralyzed for some time, but recovered full power ultimately. He developed a tremor a short time after the accident, which has never left him since. At the present time he shows well-marked choreic movements, affecting the entire body, but more particularly the left side; these movements disappear when he is asleep, but sometimes are so marked as to keep him from going to sleep. There is a certain unsteadiness about the eyeballs, this being due probably to a participation of the external eye muscles in the disease. Speech is almost impossible, partly because of the disturbance in the muscles of the tongue, and partly because of the patient's mental condition. He comprehends with difficulty, and if he answers at all, does so with a word or two, or a shake of the head. He sits for hours without taking interest in his sur-

roundings. He does not show the irascibility which patients with his disease are said to have, nor does he soil himself or make a general nuisance of himself or his attendants. Memory is very poor. Reflexes are diminished, plantar irritation provokes dorsal flexion. He does not seem to be able to smell.

Dr. Alfred Gordon stated that the case was quite typical of Huntington's chorea. The only peculiarity about it was the involvement of the upper part of the face. In the typical Huntington's chorea only the lower half of the face is affected. The eye globes are usually not involved. In this case they are. An interesting point in the history of the case is the headache, which goes hand in hand with what we know of the pathological anatomy. This is supposed to be a meningoencephalitis.

## CHICAGO NEUROLOGICAL SOCIETY

October 22, 1908

The President, DR. RICHARD DEWEY, in the Chair

### CLINICAL OBSERVATIONS OF PSYCHOSES PRESENTING THE EDDY CULT AS A COMPLICATION

By Richard Dewey, M.D.

This was a study of 8 cases in which the psychoses developed in connection with espousal of Eddyism. They were selected as typical from a large number seen during the years since Christian Science, so-called, became a method of treatment.

The Eddyism was, of course, regarded as occasion rather than cause of the mental disease, since insanity in all cases has a constitutional background of instability.

The paper was intended as a slight contribution to the question whether there was anything characteristic, *i. e.*, whether the psychopathic reactions observed showed a particular form.

The 8 cases consisted of—3 of paranoia, 4 of manic-depressive insanity and 1 of psychasthenia. There was one of recovery (manic-depressive) and 1 of virtual recovery (psychasthenia), as the patient again returned to her accustomed work of teaching; the other cases all became chronic with indications of an incurable state. One of the marked psychopathic phases was panophobia for the pharmacopeia (in connection with these phobias it is to be mentioned that 3 patients showed marked delusions of poisoning). This was present in 6 of the 8 cases—a natural outgrowth of the Eddy doctrine. Two of the cases showed a disposition to religious fasting; 3 manifested folie du doute; 3 had obsessions of evil spirits; 4 showed erotism; suicide and attempt at self injury were present in 5 cases.

The group of the 3 paranoiacs all manifested continuous and unwavering adherence to Eddyite ideas with an exalted frame of mind. These patients were in good physical condition.

In the manic-depressive group there was 1 recovery with abandonment of all Eddyite ideas. The three that became chronic cases showed intense depression and a sense of failure and disappointment which might be attributable to the peculiar contradictory and confusing method of thought

and the effort to ignore or annihilate physical and mental ills by denying and refusing to recognize. All of these cases made attempts at suicide, or self injury, in the most persistent manner, and there was noticeable, in 2 of them, a delusion of self-condemnation and unworthiness arising from a belief that they did not possess the spiritual worth and force requisite to overcome, by faith, the physical ills, or to practice "healing" as they had planned.

The patient, suffering from psychasthenia, was intensely depressed by fear of demoniacal possession, having been told by those who were treating her that if she gave way to unbelief evil spirits would wholly possess her.

It is easy to understand how ignoring a persistent pain, or denying the existence of a tumor, may result in mental strain. The disappointment of an ecstatic expectation of marvels may also plunge an unstable mind into corresponding despair.

The whole result of so-called Christian Science has been beneficial in a way never anticipated by convincing masses of people of the reality of a force for physical good residing in the mind, but victims of incurable organic disease or neurotic defect who endeavor to think or "will" disease out of existence, if defective of brain, tend to fall into deeper disease and disorder.

Dr. Sydney Kuh had seen a number of cases of melancholia, using the term merely as indicating a group of symptoms and not a type of disease, in which Christian Science seemed to have a decidedly bad effect and he could readily see how this could be brought about. One case in which this influence was particularly clear is a woman whom he had seen in three or four attacks of melancholia. He saw this woman the first time towards what was very probably the end of the attack, and she recovered in a very short time after he took charge. The recovery from the second attack was not so prompt as from the first, and the friends became dissatisfied. He was dismissed and a healer was employed, with the result that the patient very rapidly became worse. The religious ideas which she was supposed to absorb were utilized by her in the way in which melancholia patients will work up religious ideas. She began to realize fully what a horrible sinner she had been all her life, and the influence of the treatment was very disastrous, and in a very short time the family realized they were doing harm, and again changed from Christian Science to treatment by a physician.

It was a particularly striking case because the patient had been so much better before Christian Science had been employed, and because after the Christian Science healer had been dismissed there was again fairly rapid improvement in the case. Dr. Kuh did not believe that Christian Science does harm to the patient in all cases of depressive types of insanity, but believed that in melancholia it is very often decidedly harmful.

#### MULTIPLE SCLEROSIS OR HYSTERIA?

By William Healy, M.D.

Mr. X, age 38, single, painter and paperhanger, born in Germany. Father died of pneumonia, mother of heart trouble, three brothers died, ages four or five; one sister died at thirty, jaundiced; one sister aged thirty-six, well and strong, but has suffered from gall-stones.

Patient well as infant. At six years had bad attack of measles with some trouble of the eyes, following which he was confined in a dark room for six months. At twelve had inflammation of the lungs. In 1902 his mother died, which caused considerable worry to the patient and he says that he was nervous, subject to trembling and palpitation of the heart, to pain in the pit of the stomach, headaches, a feeling of suffocation, of blurring before the eyes and sometimes to vomiting. Following perhaps half a year of such symptoms he had an attack of typhoid fever and was ill for five months. He gained much flesh after the attack of typhoid, but believes that his nervous symptoms never entirely disappeared, and within the last year have grown much worse. Previous to this summer he has had attacks of pain in the stomach and a feeling of suffocation perhaps every two weeks or so. Whenever he worked hard his back has ached severely. His headache has been worse at times during the last year and for about the same time he has had attacks of cramps in the fingers so that it seemed difficult for him to let go of objects which he was grasping tightly. For six months he has noticed considerable trembling in his hands. When he had typhoid he suffered much from aching in the eyes and ever since he has noticed that some colors made his eyes feel badly and that sometimes he could not see well.

About the first of last May when standing out of doors in the evening he heard some bad news which affected him greatly. He felt as if he were struck in the head and a feeling of numbness began at the pit of the stomach and spread over him. He ran into the house and asked his sister to help revive him. He noticed at this time that he could not see anything. His physician was called. The next morning the patient says that he could see a little better and his vision improved gradually so that in three weeks he could see fairly well. It was at this time that he saw Dr. Remmen and Dr. Bassoe. For some days following this attack he had much trouble with passing water if he was anywhere in a chilly atmosphere. Urination was frequent, every ten or fifteen minutes, but was not painful. Has never had diplopia.

Patient says that since this whenever he hears disagreeable news he feels dizzy and as if he would fall down, but he is not dizzy otherwise. He complains of something coming before his eyes which prevents him from seeing well and his eyes ache easily. He has to watch himself to see that he walks straight. He tires easily and has feelings of weakness in the knees. Rarely he has pains as if a knife were going through his legs. Sometimes there is a sensation of crawling in various parts of his arm and often a feeling of numbness across the hands as if he had been struck there. Sphincters have always acted normally.

Patient says that he sometimes cries without knowing any cause for it and once he wept copiously while saying "there was nothing the matter—he could not help it." He says that when out walking near his home people notice his queer actions in trying to see well and walk straight, and say that he is out of his head; so he goes out very little—he would rather stay at home than have people criticize him. Several doctors have made statements to him or about him, patient says, which do not make him feel at all well. His lodge does not treat him well in withholding certain benefits which he thinks are his due as a sick man. No apoplectic nor epileptiform attacks. Considerable insomnia at times. Well nourished. Not anemic. Thoracic and abdominal organs negative. Gums in bad condition, suspicion of blue line. Sense of smell normal. Central

vision corrected is practically normal in both eyes. The temporal halves of the discs are decidedly pale but, according to Dr. Pusey, who has examined his eyes very carefully, are well within the physiological limits of color. Fields are about normal.

Patient has apparently considerable difficulty in making upward movement with his eyes, but, under suggestive tests, particularly with the perimeter, he was able to elevate each eye to about the normal angle. However, the eyes are elevated better singly than together. Pupils are regular and equal and react promptly. There is absolutely no nystagmus. No abnormal conditions of other cranial nerves are discoverable. Objectively, sensation appears normal, in all modalities, including vibration sense. Subjectively, the patient complains of the feelings of crawling numbness, vertigo, and pain, and also of cold hands and feet.

The feeling of tire, which the patient complains of, may be demonstrated by getting him to grasp an object repeatedly, when, after twenty times or so, his muscles apparently get stiff and weak. Separating the fingers rapidly seems to be also a very difficult task for him. After walking a few blocks he feels great necessity for sitting down on account of a feeling of weakness about the knees. Gait is rather unsteady at times, but conforms to no definite type of incoördination. He has a persistent tremor in his hands which is of large excursion and fairly rapid, but is not exaggerated by his attempt to perform any tests.

Reflexes—Tendon jerks are all lively. No clonus, no Babinski; cremasterics lively. His abdominal reflexes are very interesting. When first seen all were present and about normal. At another period they were only on the left side. Again on the right side they became evident, but less than on the left and at present they seem about equal on both sides.

About three months ago his handwriting showed a very distinct and constant tremor, not being exaggerated as he continued to write. At present the tremor is absent. Coördination good in both upper and lower limbs. Speech is quite normal. No paralysis nor spasticity.

Urine alkaline and loaded with phosphates which has alarmed the patient much, but treatment with benzoic acid for a week or two quite cleared the urine. Mentally the patient is quite normal but evidently worries somewhat about his condition.

Under treatment there has been distinct betterment. Tonics and sedatives have helped his appetite and insomnia. His weakness and paresthesias are much relieved by the application of electricity, especially of the faradic brush, and in other ways the patient has showed his easy suggestibility. On attempting to work at his old trade he notices a great sense of weakness and pains in his back follow.

Dr. N. Remmen said this patient had come to him last May on account of trouble with his eyes. Vision was normal and the discs looked normal. He had difficulty in looking upward and the eyes were constantly turned down. He found the knee-jerks very much exaggerated and thinking the patient had multiple sclerosis had sent him to Dr. Bassoe for examination.

Dr. Peter Bassoe said the patient had walked into his office on May 21 with his head thrown far backward in order to be able to look forward. Apparently there was complete loss of the upward conjugate movement of the eyes. He could read even fine print well with one eye but not so well when using both eyes. The patient's manner was extremely nervous and apprehensive. Dr. Bassoe found the knee-jerk exaggerated, the other

reflexes normal, and thought an intention tremor was present. He made a diagnosis of multiple sclerosis and communicated this both to Dr. Remmen and to the patient's family physician. Unfortunately, the latter tactlessly told the patient that he was suffering from an incurable organic disease. Shortly afterwards he went to the Polyclinic. Dr. Bassoe called attention to the frequency of great muscular exhaustibility as a symptom of multiple sclerosis, and that Egger has suggested that the transient blindness sometimes observed may be due to exhaustibility of the visual apparatus. He still is inclined toward the diagnosis of multiple sclerosis in this case.

Dr. Sidney Kuh, after examining the patient, said there was still a decided difference in the abdominal reflex, the right one being diminished. When he attempts to look upward he follows the finger better with the left eye than with the right. Aside from this he has a front tap, a reflex to which neurologists, as a rule, pay very little attention. Dr. Kuh had been interested in it for some years and watched it very closely, and he had not succeeded in finding a front tap in any case in which he could positively make a diagnosis of a functional disease. He had always thought that the presence of a front tap indicates organic lesion. Dr. Kuh considers the case an organic one without, however, venturing a positive diagnosis, although the condition of the abdominal reflexes suggests multiple sclerosis.

Dr. Geo. W. Hall cannot see anything in the case upon which to base a diagnosis of multiple sclerosis and considers the case a functional one. The condition of exhaustibility would lead him to consider myasthenia gravis more strongly than multiple sclerosis, as every cardinal symptom of the latter is absent.

Dr. A. E. Luckhardt when he first saw the patient with Dr. Healy, at the Polyclinic, considered the case a purely functional one. The fact of the patient's improvement and that he would feel stronger after faradic treatments confirmed this. However, he has never known the abdominal reflex in a functional disease to vary as it has in this case, which suggests multiple sclerosis as a distinct possibility.

After several other remarks by various members Dr. William Healy, in closing the discussion, said that von Leyden had been one of the first to call attention to exhaustibility as a valuable early sign in multiple sclerosis. Müller, in his book, states that 80 per cent. of cases of multiple sclerosis in the early stages show abnormality of the abdominal reflex. Dr. Healy has always seen it modified in cases of multiple sclerosis. When he first saw this patient he was firmly of the opinion that it was a case of hysteria. Now he is undecided and must leave the question of diagnosis open.

## THE BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

October 15, 1908

The President, DR. C. W. PAGE in the Chair

## A CASE OF WORD DEAFNESS WITH INTELLECTUAL DEFECT

By E. W. Taylor, M.D.

The following case was reported because of the difficulty in diagnosis, the unusual mental state and the exceptional character of the isolated aphasic disturbance. The patient was a minister, 52 years old, of a high degree of cultivation. For some years a certain difficulty in the use of language had been noticed, gradual in onset, which with the development of unusual behavior had led to the necessity of giving up his work which was of a very active sort in a missionary field. When first examined the patient presented the contradictory appearance of alertness, together with a curious incapacity in conversation, which suggested dementia. His language also, which was fluent, ran particularly on certain topics unrelated to the questions which were being discussed, and there was also a definite failure of apprehension of the condition in which he then was. He was for example possessed with the idea that his physician was able to secure him a university position in which he might teach Latin and Greek. This idea it seemed almost impossible to eradicate. He resisted physical examination, maintaining that he was well and simply wanted a teaching position. Intellectual tests showed a defect out of all proportion to his general appearance of alertness. Further investigation at many subsequent visits proved that he was almost totally word deaf and that it was impossible to convey one's meaning through spoken words. This explained the fact that questions asked were never properly answered. It became apparent that in order to cover his inability to understand he had formed the habit of discussing wholly irrelevant subjects with the apparent idea that he could thus deceive those with whom he was talking. Tests for aphasia elaborately carried out showed no other sign of defect than pure word deafness, except a certain incapacity readily to understand written language. His speech was voluble and not paraphasic. His eyesight so far as ascertainable was unimpaired. He wrote with great readiness and perfect correctness of spelling and punctuation long statements vaguely intelligible. His quickness of apprehension when he could be made to understand was equally remarkable. Elaborate computations, for example, were done with perfect correctness. The following is a sample of this method of expression:

"Well suppose I go on Thursday afternoon and I will read Latin and Greek but I will be in cooperation with Virgil and Iliad and I will read some lines and paragraphs. Perhaps I am not a professor, but you can make me an assistant tutor, and I like classics—and I had just Honor Classics in the standard to Dalhousie College."

It was not possible to determine any objective cause for the symptoms. There was no marked arteriosclerosis nor was there evidence of softening



or tumor. The etiology therefore remains obscure. His subsequent history is not definitely known, but so far as can be learned he has not improved.

Dr. Abbot said the case seemed to him very suggestive of arteriosclerotic dementia of not very rapid progress. The early symptoms, resembling somewhat those of general paralysis, are significant; and the tendency to repetition of a word or phrase, such as this case showed, is not at all uncommon. If it is a case of arteriosclerotic dementia, what we may call the physiological locus of chief defect—auditory deafness—is very interesting.

Dr. Goss said that Dr. Taylor's case reminded him of one that came under his observation last spring. A young man was thrown from an electric car striking on his head. He was taken up unconscious, taken to the City Hospital, and remained unconscious about two weeks. Diagnosis: fracture of the base of the skull.

About six weeks later he was committed to the Taunton Insane Hospital as insane. He was found to be totally deaf in both ears, and to all written questions he gave utterly irrelevant answers. In a few days he gave correct answers to all questions written in capital letters, but irrelevant answers to questions written in script.

Repeated examinations revealed the following condition: Some days he gave irrelevant answers to all questions written in capitals or script. Other days he gave correct answers to questions written in capitals, but irrelevant answers to all questions written in script. On still other days he gave correct answers to all questions written in capitals or script.

In about a month he was discharged from the hospital. About a week later he visited the hospital and paid his bill; said that he was feeling all right. About three weeks later he suddenly became comatose, and was taken to the City Hospital where he died two days later. Autopsy revealed fracture of the base of the skull with meningitis.

## ARTERIOSCLEROSIS IN A YOUNG MAN

By G. L. Walton, M.D.

Dr. Walton reported the following case of arteriosclerosis at 29 yrs. A young man of 29, patient of Dr. Harding, became rather suddenly aphasic the last of March. He had had no prior epileptiform or apoplectic attacks and no change of disposition, no extravagant ideas or other mental disturbance. There was no history or evidence of syphilis. The aphasia was sensory. He could not understand commands more complicated than to shut the eyes or show the tongue. He could not read either aloud or to himself. The urine was 1.018, slight trace of albumin; the heart dullness was increased to the left; the blood pressure was over 180, the arteries were prominent and hard.

The aphasia gradually increased and other head symptoms appeared. On April 12 he was stupid, and the grasp was weak on the right. Incontinence of urine now appeared. The temperature was 102.6°, dropping the next day to 101°. The stupor gradually deepened and death followed.

## RESPIRATORY PARALYSIS

By G. L. Walton, M.D.

Dr. Walton also reported a case of respiratory paralysis in a young woman of 27, patient of Dr. Harrington, who operated for a movable kidney. The operation was uneventful. She had been under ether about an hour when after retching she suddenly stopped breathing. The pulse continued of good character and strength, and the color remained good so long as artificial respiration was kept up; when it was discontinued she became cyanosed. This occurred about noon. At the time Dr. Walton saw her there was complete flaccidity, the pupils were non-reactile, all reflexes were absent. There was no sign of consciousness. Artificial respiration was kept up till she died about ten in the evening.

This rare condition is described by Ross as paralysis of respiration, from a lesion limited to the respiratory center. Death immediately ensues, but the circulation may be kept up for a long time mechanically by artificial respiration.

Dr. Abbot: Dr. Walton's case of early arteriosclerosis calls to mind a case that Dr. Southard may perhaps recall that I saw several years ago at the Boston City Hospital. It was of a man about 35 or 36 years old who presented symptoms very suggestive of general paralysis of only a few months' duration. In fact I made the diagnosis of probable general paralysis to the family, though with some mental reservations. On autopsy there was found to be an almost pipe-stem-like sclerosis of the circle of Willis and if I remember correctly some of the cerebral vessels showed marked sclerosis, though not of the same degree of calcareous deposit.

## SUBCONSCIOUS PHENOMENA AND ALLIED CONDITIONS

By Author V. Goss, M.D.

Of recent years much careful study has been given to subconscious phenomena and allied states, especially noteworthy being the studies of Dr. Prince of double or dissociated personalities.

We must all recognize that the subject is obscure and difficult of comprehension, and that well-authenticated, undisputed data are none too numerous. Three cases have fallen under Dr. Goss' observation,

Case 1: Condition allied to somnambulism. A medical student engaged in nursing falls asleep; awaking suddenly he finds all voluntary muscles temporarily paralyzed, consciousness being impaired. Condition passes off suddenly in a few seconds.

Case 2: Partial aphasia coming on suddenly, due to long-continued nervous strain. A young woman who had been under long-continued nervous strain falls unconscious at the funeral of her sister. She recovered consciousness in an hour or two, but had complete amnesia of her sister's death and burial for some ten days: her memory then suddenly returned.

Case 3: A case of double consciousness. A young woman subject to angina pectoris frequently presented the phenomena of double conscious-

ness, the abnormal condition always coming on suddenly at the height of a severe attack of angina, and passing off suddenly as soon as the pain was relieved.

Dr. Lane said that the condition described in Dr. Goss' first case has been termed the hypnagogic state and is allied to somnambulism. In the waking period the return of consciousness is delayed and we get a state of partial consciousness. Dr. Lane has known of a few instances.

He saw this summer a case of double personality; he was unable to get a history of initial mental shock or strain as we are told is common. A man, a mill worker, has been for years in the habit of wandering away from home and waking up suddenly in a distant town 10 to 100 miles from home with no knowledge of how he got there and no memory of any event since leaving home. By inquiry he has learned that he sometimes rides and at other times walks, usually both. He is usually tired and foot-sore. He has these "spells" as often as once a week. He can tell when one is "coming on" as he feels restless and wants to keep moving. He has never got into any difficulties when in these attacks and he attracts no attention. A friend who saw him in one noticed nothing out of the way. His wife, thinking these strange phenomena must be due to dissipation took their child and went to a distant state and left him to shift for himself. When getting ready to come to Boston for treatment he wandered away twice in three days. After reaching Boston and placing himself under care he had none for a month. Then he had two brief attacks, once going five miles and once about fifteen. He is an active intelligent man and a leader among his fellows.

# Pertiscope

## Journal of Mental Science

(Vol. LII. No. 219. October, 1906)

1. The Evolution of Insanity. ROBERT JONES.
2. The Neurone Theory—Fatigue, Rest and Sleep. W. BEVAN LEWIS.
3. Alcohol and Insanity. The Effects of Alcohol on the Body and Mind As Shown by Asylum and Hospital Experience in the Ward and Post-mortem Room. F. W. MOTT.
4. Amentia and Dementia; a Clinico-pathological Study. JOSEPH SHAW BOLTON.
5. On the Psychology of the Crusades. WILLIAM W. TRELAND.
6. The Possibility of the Limitation of Lunacy by Legislation. M. J. NOLAN.
7. Insanity and Indicanuria (Indoxyluria). C. C. EASTERBROOK.

1. *Evolution of Insanity*.—After having completed a service of twenty-five years in the care and treatment of the insane, Dr. Jones, in his presidential address before the Medico-psychological Association of Great Britain and Ireland, gives some interesting observations and conclusions. He reviews, at some length, the history of insanity from the earliest times, 2000 B. C., through Biblical history and the period of Greek preëminence, the time of Hippocrates, Galen and Aristotle, when the first attempt at a classification of insanity was made. The advent of the Christian era shows us the most extensive humanity in the treatment of the insane. Following this, however, ignorance and superstition exercised a most inhuman influence on the insane, and the treatment was characterized by barbarity and cruelty. This lasted until the rise of the Bologna school in the seventeenth and eighteenth centuries. The treatment now in vogue shows wonderful progress, and the contrast is striking.

Continuing his observations to modern times, the author quotes some interesting statistics in regard to the increase of insanity. Since 1880 this increase in England and Wales has been 40 per cent., while the increase in population has been 25 per cent. The various causes for this great increase in insanity are considered. Aside from heredity, venereal diseases and intemperance in the use of alcohol, sociological factors, such as over-stimulation induced by modern conditions, plays an important part. He also states that modern competition and "high pressure" of today are responsible for a large variety of mental diseases unknown to older physicians.

Unwarranted statements of the press in England, condemning the asylum physicians, and blaming them for the present status of insanity, and for their failure to cure patients with mental trouble are discussed, and the asylum physicians defended. From statistics it would seem that the proportion of cures of the insane do not fall so far behind cures in other branches of medicine.

A comparison of the varieties of insanity acknowledged a century

ago, and those recognized today, shows that epilepsy has changed but little. General paralysis shows a remarkable increase, and in the last thirty years (statistics from Clouston), it has increased from 7 per cent. to 23.5 per cent., as a cause of death in women, in this author's experience. Also that the time of onset of general paralysis, after syphilitic infection, is shorter than formerly. He could have added that the mental types of this disease had greatly changed in that time. The classical expansive paralytic, with delusions of grandeur, has given place to a more mild demented type, so that in this country, at least, the former type is comparatively seldom seen. Dementia præcox (or its equivalents), considered very rare in former years, has now become very common, and this cannot altogether be ascribed to a change of nomenclature. Regarding congenital varieties of mental deficiency, it is surprising to learn that they are not on the increase; also that he considers these conditions due to accidental arrest of development, etc., and not controlled by natural laws. While this may be to some extent true, still, in the light of modern pathological anatomical investigations, these conditions are better explained by definite disease processes, caused either by direct transmission of infection, such as syphilis, or by the effect of alcohol on the embryonic structures, and lastly, by inherited mental deficiencies. The author states that "If only the evils of alcohol and venereal diseases were disposed of, half the problems of insanity would disappear with them," a statement that is only too true. He also discusses and outlines plans toward preventing insanity, rather than trying to cure it. Various statutes in relation to the insane in England are discussed, and improvements proposed that apply only to that country.

2. *The Neurone Theory.*—As a preliminary discussion to the author's view of fatigue, rest and sleep—the prevalent opinions for and against the neurone theory are given at length. The merits of each side are clearly presented, and the author prefers to array himself with those who support the theory. He expresses some interesting views regarding fatigue, although these views are at variance with popular belief. He does not consider that physical exercise is a mental restorative after mental fatigue. But Kræpelin has shown that moderate physical exercise accelerates the psychical function, and acts as a distinct stimulus to the same. In regard to sleep, he gives the following conclusions: (1) The retraction of the dendrites as a whole is most improbable, nor does it admit of proof by any known method of research. (2) Even were its possibility admitted, the enormous wealth of structure in these dendritic fields, as shown by Cox's method, is such as to preclude the possibility of neurone isolation to the extent suggested. (3) The contact of gemmules and the break in contact on their retraction is far less open to question, and admits of possible proof by further methods and research. The author finally states his conclusions relative to the points that are necessary for a teacher to have in mind, so as to teach children properly, and not overwork them. He maintains that when nerve cells are fatigued, they pass on, with continued stimulation and inadequate rest, to structural diseases, and that failure to detect early indications of "brain fag" in young growing children may lead to irreparable mischief. He concludes that there is a definite time in the day when certain children are capable of giving the highest work values, and that the teachers should avail themselves of this energy at this particular time. Also that periods of rest should always follow periods of effort to realize the best work values.

Further, that adolescent insanity is most liable to occur in neurotic subjects and persons of mental weakness, who at this time of life are exposed to the stress of overwork, pressure and competition, conjoined with inadequate rest and sleep. He also states that ten hours sleep are necessary for children, in order to fully counteract the effects of fatigue, and to prepare them for the succeeding day's work.

3. *Alcohol and Insanity*.—Dr. Mott, by virtue of his connection with a general hospital as well as an insane hospital, has an unusual opportunity to study the effects of alcohol on both body and mind, and his observations are particularly useful, as he is apparently unbiased in his conclusions regarding the evil effects of this agent. While he admits the etiological rôle of alcohol in producing psychoses, still, he does not think that insanity would diminish to any great extent, certainly not to the extent that the temperance enthusiasts would claim would be the case, if alcohol were prohibited. He does think, however, that there would be far less crime, disease and pauperism if alcohol were prohibited throughout the country. He claims that drinking in pursuit of pleasure by the well-fed, is far less liable to produce insanity than drinking in flight from despair and misery by the ill-fed, emotional, neurasthenic and neuropathic individual. He recognizes, however, that the abuse of alcohol is the most fruitful cause of over-full prisons, workhouses, hospitals and asylums. The question is discussed, why do sensible, thinking men continue to indulge in alcohol if it is such a harmful agent? But he makes no attempt to answer it. He abhors the propagandist with his egotism, narrowness and unreasonableness, but agrees with the teaching of Parks, "as now used by mankind, it (alcohol) has infinitely more power for evil than for good.." He contrasts the effects of alcohol as seen in the asylum with that of the hospital, and arrives at the conclusion that "the abuse of alcohol by the epileptic, imbecile and potential lunatic," is sufficient to bring him to the asylum long before he can drink enough to produce a cirrhotic liver. In the post-mortem room of the asylum it is very rare to find internal organs, especially the liver, affected to the extent that they are affected in the post-mortem cases of the hospital.

The author goes into a lengthy discussion of the various forms of insanity produced by alcohol, and gives some interesting clinical symptoms, also some good tests for detecting the loss of memory in alcoholics that have apparently recovered. Taken altogether, it is a very good exposition of the etiological rôle of alcohol in producing mental disease.

4. *Amentia and Dementia*.—(Continued article.)

5. *The Psychology of the Crusades*.—A very interesting article, showing the effect of communicative insanity on a credulous people, inspired by the Pope with offers of religious reward for taking up the cause.

6. *Not suitable for abstracting*.

7. *Insanity and Indicanuria*.—The author reviews two papers recently published in the *Journal of Mental Science* regarding the question of the relation of indoxyl in the urine and insanity, especially melancholia and depressives, and shows the fallacy of the opinions based upon the examination of urine for this substance. He criticizes the method used and the conclusions arrived at by these men (Townsend and Bruce), and disagrees with them entirely. His own experience, based upon the examination of 2,000 cases (against 27 by Bruce), lead him to believe that the proper sequence is melancholia, constipation and indicanuria. One is led to believe that his views are entirely in accord with the facts, and that

the opinions of those who would affirm that indicanuria had any causal relation to mental disease, were based upon insufficient examination and errors due to a failure to take into account the effects of ordinary constipation in those not affected mentally. (Vide abstract of *Journal of Medical Science* in the issue for January, 1908.)

COTTON (Trenton).

### Journal de Neurologie

(1906, 16, 17, 18, 19)

These numbers are devoted to the proceedings of the Second Belgian Congress of Neurology and Psychiatry.

1. Presidential Address. "Neurasthenia." CROCQ.
2. The Theory of the Neurone in the Last Decennial Period (1896, 1906). M. STEFANOWSKA.
3. Mental Tests as Applied to the Child. DECROLY and BOULENGER.
4. Lunatics Who Dissimulate. MOOR and DUCHATEAU.

1. *Presidential Address: "Neurasthenia."*—Calling attention to the confusion which exists in the general conception of neurasthenia, held by the medical profession and laity alike, the author pleads for greater accuracy in separating the different nervous states, and especially for the differentiation of functional conditions from those symptomatic of organic disease. For him neurasthenia is a definite disease, not merely a symptom-complex, and at the start he rules out the great array of degenerates who show the various phobias, aboulia, etc. In his opinion a hereditary constitutional basis is not necessary but the disease may arise as a result of exhaustion from excesses, intoxications or any other cause. He gives a short sketch of the symptoms of this disease and its diagnosis from general paresis, dementia præcox and other conditions in which symptoms of irritable weakness of the nervous system are present. He thinks that the term "neurasthenic states" is more or less objectionable but considers these as comprising: (1) True neurasthenia, an autonomous curable disease. (2) Constitutional neurastheniform states against which our therapeutic resources are often powerless. (3) Neurastheniform symptoms accompanying certain organic diseases, and whose prognosis varies according to the nature of these diseases.

2. *The Theory of the Neurone.*—In a critical review of 75 pages the authoress considers, in order, the work of Apáthy, Bethe, Held, Auerbach, Nissl, Joris, Donaggio and others, opposing the neurone theory, and that of Ramon y Cajal, of Van Gehuchten and his pupils, of Lenhossék, Marinesco, Lugaro and others, in its support. She then proceeds to a general discussion of the subject, examining one by one the following postulates of the partisans of the theory: (1) The neurone is an embryological unity. (2) The neurone is a cellular and anatomic unity. (3) Besides the neurone there is no other nerve element. (4) The neurones are in relation to each other by contiguity. (5) The neurone is a trophic unit. (6) The neurone is a functional and physiological unit. The embryological unity of the neurone she thinks severely shaken by the results of the researches of a number of authors which seem to show, on the one hand, that the nerve fiber is developed by the apposition of a number of cells in a chain, and on the other by the work on the autoregeneration of the nerve fiber by Bethe, Monkeberg, Merzbacher, Ballance and Stewart, and Van Gehuchten. The results of these authors have, however, been disputed, and in

some experiments of her own, on very young white mice, the authoress could not convince herself that the nerve fiber was ever developed from more than one cell. The ardently disputed question of continuity or contiguity, is considered at length, and while giving to Apáthy and Bethe full credit for the discovery of the neurofibrils, since amply confirmed by the newer researches of Ramon y Cajal and others, by the Spanish histologist's new and easily applied fibril method, and while acknowledging that in invertebrates the relation of continuity exists, she maintains that in the case of the higher animals these authors have failed to demonstrate such a relation, but have concluded that it exists here also, simply on the strength of what they have observed in invertebrates. The results of Ramon y Cajal, and others, are directly opposed to the idea of continuity, for, while the plexuses of neurofibrils have been clearly enough demonstrated, in no case could anastomosis of fibrils from different neurone systems be found. As to the network surrounding the nerve cells which has been called by Bethe the "Golgi network," the fact of its nervous character is disputed, being denied by Golgi himself. The pericellular network of Held and his "neurosomes" (or "end feet") have been confirmed by other observers, especially by Ramon y Cajal working with his new silver method, and that these are nervous structures there seems little doubt. No one, however, has found that there is any passage of fibrils from the pericellular network *into* the ganglion cells and the end feet have never been seen to separate the cell wall. This relation is made especially clear by the silver method of Cajal. Hence, at any rate, as relating to vertebrates, the idea of relation by contiguity does not seem to the authoress to be shaken. As stated above, the experiments upon the regeneration of the peripheral nerves has thrown considerable doubt upon the trophic unity of the neurone. The interpretation given to these results has, however, been strongly disputed by Dejerine and others who claim that in the experiments upon which they are based, the possibility of the connection of the cut nerves with the spinal cord centers through the medium of branches from some other nerve was not eliminated beyond all doubt. As to the physiological and clinical unity of the neurone, the authoress shares the views of those who hold that even if the idea of the anatomical unity had to be modified, nothing has so far been brought out which forces us to abandon our view of the essential unity of the neurone in physiological function. What we have observed of the course of the nerve impulse and the reflexes speaks in favor of this, and no one has yet been able to show that degeneration passes over from neurone to neurone. She finally takes up the theory of this amoebism of the nerve cells of Mathias Duval, and in this connection gives a résumé of some investigations with regard to the pearls on the dendritic processes carried on by herself and published in 1897.

In order for this theory to be correct it would be necessary to demonstrate that the prolongations of the nerve cells are really capable of elongating, that the formation of these pearls is due to the retraction of these prolongations, that the pearls appear and disappear rapidly like the pseudopods of the amoeba with which the prolongations of the nerve cell have been compared. The authoress thinks that there has been a confusion of the normal and the pathological morphology of the neurone on the part of those who have sustained the theory of amoebism, and who seem to have become possessed of a false idea with regard to the rôles respectively of the pearls or, as she prefers to call them, "pyriform



appendices," and of the moniliform or varicose condition of the dendrites. She has studied the nerve cell and its processes by the various modifications of the chrome-silver method as well as by the vital methylene-blue methods and finds that the pyriform appendices are demonstrable by each of them, hence they can hardly be considered as artefacts. That both they and the dendritic process proper are modified in disease and in intoxications she also shows. The dendrites undergo varicose or moniliform change while the pyriform appendices may disappear, these changes being more or less independent of each other. In animals subjected to the action of strong electric currents, and in those kept under prolonged narcosis, similar changes have also been found. In sections prepared by the fibril method of Cajal, the pyriform appendices are not visible, hence they are probably protoplasmic structures. In the pathological conditions studied they seem in some way absorbed by the dendrite on which they are implanted. In the moniliform condition too, the neurofibrils escape, the protoplasmic sheath alone being affected. The authoress has never found retraction of the dendrites in the moniliform condition and thinks that we have not to do here with a "contraction of the protoplasm" but with an abnormal liquefaction. Hence the idea of a "Morphological plasticity" or amoebism of the neurone as based upon this moniliform state is considered by her as a gross error. A list of over two hundred references is appended.

3. *Mental Tests as Applied to the Child.*—In a very comprehensive report covering over one hundred pages, the authors consider the application of psychological tests to children. In their opinion, mental tests should take in both observation and experience, should be short and easy enough to be used as a routine practice, and exact enough to give reasonably constant and comparable results. Since the aptitudes of mankind are variable and unequally distributed, they think that the questions to be answered, if possible, are, on the one hand, what special aptitudes are necessary for any given professional work, on the other, what particular aptitude does a given child possess? Dividing their report into two parts, in the first they pass in review the various tests proposed by different authors and it here appears that the schemes for testing will vary considerably, depending upon whether they are to be applied to normal or to defective children. In the second part of their report, they consider the results of mental tests as applied to very young children, beginning with such observations upon anencephalous monsters as have been published from time to time, next considering such as have been made upon prematurely born infants, and so on up to children aged three years. To a general statement of results obtained as set forth in the literature, they add a short résumé of their own experiences in series of eighteen cases. Into their methods, as detailed, and into the conclusions which they draw, it is impossible to enter in a short abstract. Suffice it to say that for children from birth to the age of three years, they propose a series of simple tests relating to taste and ability to select aliment, to cutaneous and articulo-muscular sense, to vision (with motor reaction), to hearing (with motor reaction) and language, to skill in executing movements, to sociability, playfulness, sentiments, etc. Those specially interested in the subject will find in this report a number of valuable suggestions, and should consult it in the original.

4. *Lunatics who Dissimulate.*—The author thinks that the question of dissimulation deserves attention quite as much as that of simulation,

since many lunatics, for various reasons, will try to cover up their condition. After giving short histories of some cases illustrating this symptom as found in defectives, sexual perverts, chronic alcoholism, paranoia and manic-depressive insanity, they draw the following conclusions: (1) Dissimulation requiring a certain cerebral tonus, and relative integrity of judgment and will, can only exist in those psychological states in which the syllogistic faculties are preserved or in the period of remission of other psychoses. (2) Dissimulation is found in different kinds of insanity, but specially in melancholia, paranoia and mental degeneration. (3) Dissimulation has a greater importance than simulation, especially in the case of lunatics demanding their discharges. (4) The diagnosis of dissimulation requires prolonged observation preferably in a hospital or asylum.

C. L. ALLEN (Los Angeles),

### Journal de Neurologie

(No. 1. 1907)

1. Psychic Imitation, Normal and Morbid. MARANDON DE MONTYEL.
2. Application of the Diazo-reaction to the Prognosis in Status Epilepticus. MASOIN.

1. *Psychic Imitation, Normal and Morbid.*—A discussion of the mechanism of psychic imitation, whether it is of endogenous or of exogenous origin. The author, a partisan of the origin of the emotions from within, regards their expression through gestures, etc., as secondary to the mental process at the base of the affective state, and not as the primary source of this state. He supports his position with his usual vigor, but into his arguments it is impossible to enter in a short abstract.

2. *Application of the Diazo-reaction to the Prognosis in Status Epilepticus.*—The author gives a résumé of the conclusions arrived at, in a mémoire recently presented by him to the Academy of Medicine of Belgium. He expressly affirms that he does not claim that the conditions giving rise to the diazo-reaction are the cause of epileptic attacks. There is simply a chronological relation. He was able to apply the test for this reaction in 16 out of 35 cases of status epilepticus. Of these patients, 19 died while 16 survived. In the 16 cases examined for the diazo-reaction, a positive result was obtained in 9 cases, a negative in 7 cases. Of the 9 cases showing a positive reaction 6 died, 3 survived. Of the 7 cases with negative reaction, one died, 6 lived. He hence feels justified in concluding that the presence of the diazo-reaction in status epilepticus is distinctly an unfavorable sign, its absence, on the contrary, favorable. These indications are, however, only relative since, while the absence of the reaction is in general a favorable sign, its presence does not necessarily imply a fatal issue.

(No. 7. 1907)

1. *The Relation Between Dipsomania and Chronic Alcoholism.* SOUKHANOFF.

Considering this condition as he has observed it, the author feels justified in drawing the following conclusions: (1) Typical dipsomania develops after antecedent alcoholism, occasional or chronic. (2) It shows itself by preference during middle life. (3) It appears as one of the phases of long continued abuse of strong drinks. (4) In cases of dipsomania the use of alcoholic beverages has, according to the case history, usually been begun early, even in adolescence.

(No. 8. 1907)

1. *Definition and Nature of Hysteria.* CROCQ.

Basing it upon a consideration of the writings of various authors, and upon his own experiences, this author gives the following as a definition of hysteria: "Hysteria is a psychopathological state characterized by hyperimpressionability, diminution of cerebral control, and hypersuggestibility."

(No. 19 and 20. 1907)

1. *Conjugate Deviation of the Eyes and of the Head.* A. DEBRAY.

In his report, presented to the Third Belgian Congress of Neurology and Psychiatry, the author gives a quite complete résumé of the present status of this subject, discussing in three chapters the description of the symptom; the pathogenic lesions and functional troubles giving rise to conjugate deviation; the theories as to the pathogenesis of conjugate deviation of the eyes and head. He sums up his conclusions as follows:

(1) Conjugate deviation of the eyes and head is of both paralytic and convulsive nature. (2) The lesions which give rise to it may be seated in the cortex, in the interior of the brain, the midbrain or the sense organs. (3) The direction of the deviation is different depending upon the cause which produces it. The eyes and head are turned toward the lesion when it is cerebral and paralytic, towards the sound side when the cerebral lesion is irritative. In midbrain lesions the contrary is the case; irritation of the peduncle causes the head and eyes to turn toward the side irritated; destruction of the brain axis at this point causes turning of head and eyes to the opposite side. (4) There are, in the cortex, two points whose excitation gives rise to conjugate deviation, one, the posterior, being situated at the anterior end of the interparietal fissure, the other, the anterior, at the foot of the second frontal convolution. Each of these centers is subdivided into two subordinate centers, one for movements of the head, the other for those of the eyes. (5) These anterior and posterior centers preside over conjugate movements of the head and eyes in physiological function, as in vision, audition or in mimic movements. In conjugate deviation of the eyes and head, they can only be points of reflexion for the different cortical sensorial zones. (6) If conjugate deviation can, in certain cases, be due to deficient power in any one of our sense organs, it must be admitted that the reflex center of this pathological movement is not situated in the cortical sensorial zone. (7) Conjugate deviations from mesocephalic lesions are of sensitivo-sensorial, or of motor order. (8) Deviations of sensitivo-sensorial order are often due to alterations in the sense organs. (9) Those of motor order are variable in their intensity, from moment to moment, on account of the multiple factors acting separately upon the motor nuclei of the midbrain. (10) These different motor nuclei are, however, under the dominance of a supranuclear center seated in the corpora quadrigemina, a center united to the different subjacent motor nuclei through the fasciculus longitudinalis posterior.

(No. 21. 1907)

1. *Kleptomania in a Hysteric Having Presented, at Various Times, Systematized Impulsions of Various Kinds.* E. B. LEROY.

History of a woman, the daughter of an alcoholic father, whose life, more or less irregular, had been marked at different times by imitative conceptions and tendency to impulsive acts. Finally, in middle

life, these took the form of irresistible impulses to steal trifling articles which she could perfectly afford to buy and which she did not need. She came under the care of the author seeking cure. He regards the case as one of psycho-asthenia, in the sense of Janet.

(No. 22. 1907)

1. *Presentation of Diamandi, Calculator of the Visual Type.* MÖLLE I. JOTEYKO.

A study of the Greek lightning calculator, Diamandi, and his comparison with another individual having a similar aptitude, the Italian Inaudi. The Greek differs from the Italian in being a man of considerable education, brought up to commercial pursuits and having facility in mathematics, while the latter is uneducated and possesses solely the ability to make rapid calculations which he does nightly for the entertainment of audiences at music halls, etc. He also shows some of the minor stigmata of degeneration, while the Greek is a man of fine physique and good mind. A comparison of the methods of the two shows that Inaudi is a pure auditive fixing the numbers in his mind as his manager reads them aloud to him, while Diamandi reads off the figures from a list and forms in his mind a picture of them. He also possesses a complex "zig zag" numeral scheme which he locates "to the left in his head." He can also solve problems after audition but hesitates and is apt to make mistakes. While Inaudi can learn a series of figures more rapidly than his rival, the Greek can repeat and calculate, in considerably less time. The authoress urges the necessity of taking into consideration, in schemes of instruction, whether the pupils are visuals or auditives.

(No. 23. 1907)

1. *Amyotrophic Lateral Sclerosis of Hemiplegic Form in a Sixteen Year Old Subject.* BOUCHAUD.
2. *Medullary Anesthesia.* NORCA.

1. *Amyotrophic Lateral Sclerosis.*—Report of the case of a boy 16 years old in whom there was atrophy of muscles and spastic paralysis limited to the left side, with a discussion of the reasons which lead the author to make a diagnosis of amyotrophic lateral sclerosis.

2. *Medullary Anesthesia.*—The author studied the condition of the reflexes, and the sensory and motor phenomena in a dozen cases which were subjected to medullary anesthesia at the surgical clinic of Prof. Jonnesco. The anesthetic habitually employed was stovain, in the dose of 0.10 grm. and the place of injection was the third lumbar interspace. He observed the following order of sequence of phenomena. First the cutaneous reflexes disappeared, next the tendon reflexes, then sensibility both superficial and deep was abolished, and movements soon were lost. These phenomena proceeded from below upwards. The Achilles reflex disappeared before the knee-jerk, and in too small dose the skin reflexes disappeared while the tendon reflexes persisted. Sensibility was first lost in the perineum, genital region and feet, disappearing successively in the legs, thighs and abdominal region. Pain sense was lost before touch or temperature senses. The functions of the spinal cord were reestablished in a reverse manner, and quite slowly after a full dose of stovain, loss of skin sensibility occasionally persisting for hours or even one or two days.

(No. 24. 1907)

1. *The Remote Consequences of Oculo-motor Paralysis.* A. ANTONELLI.

A communication made to the Congress of Neurologie, in August, 1907. The author gives the following résumé of his conclusions. Old paralysis of the sixth pair (having lasted several weeks or months) leave—the more easily the younger the patient—a convergent strabismus having all the characters of the ordinary strabismus called concomitant. Old paralysis of the third pair—somewhat more rarely as their symptomatology is usually more complex—leaves a divergent strabismus or at least a manifest insufficiency of convergence, absolutely analogous to the divergence called concomitant, for example, as seen in myopic individuals. Isolated paralysis of the fourth pair are too rare to permit us to fix their remote consequences. The remote results just described are found to some extent also in cases in which the loss of motility proper has been recovered from. The excursions of the eyes can be accomplished normally but there remains a strabismic deviation and difficulty in associated motion. Deviation is never due to a contracture but always to loss of tonicity in the paralyzed muscle and the action of its antagonist. After a very long time there may be some shortening of this antagonist but never a true contracture. Deviation provokes at first, and aggravates later, the diplopia, and now neutralization of the false image comes into play. This is nature's method of compensation, but later, if the motor paralysis is cured, the persistence of this neutralization is the cause of the suppression of reflex fixation and prevents the reestablishment of binocular motility properly called.

## Revue de Psychiatrie et de Psychologie Expérimentale

(January, 1908)

## 1. Diagnosis of the Delirium of Interpretation. P. SÉRIEUX and J. CAPCRAS.

1. *Delirium of Interpretation.*—The characteristics of the delirium of interpretation are that it occurs in lucid, constitutional psychopaths, not mentally enfeebled. The affection is incurable, and is characterized by a proliferation of delusional interpretations which coördinate themselves into a system more or less coherent without notable dependence on sensorial disturbances.

This psychosis has been described by several authors but not isolated by them. Thus it is included in Esquirol's *monomanie intellectuelle*, in Leuret's *arrangeurs*, in the *paranoïa combinatoire* of Mendel and Kraepelin, and lastly in the *persécutés héréditaires* (1878) of Falret, to a criticism of which the authors limit themselves. Falret recognized that certain of his cases did not have hallucinations of hearing nor ideas of grandeur. Ritti subsequently made the same observations calling attention to cases who, while they had great pride, did not have delusional ideas of grandeur. The authors conclude, therefore, that Falret had recognized the delirium of interpretation without specially designating it and undertook only to break up his large heterogeneous group of *persécutés héréditaires* often spoken of indifferently in accord with the point of view as *persécutés raisonnants* or *persécutés-persécuteurs*. From this group the authors separate out the *délire de revendication* and the *psychoses interprétatives symptomatiques*.

2. *Délire de Revendication.*—This psychosis may be defined as a

chronic systematized psychosis constituted by the exclusive predominance of a fixed idea which imposes itself upon the mind as an obsession. It is a monoideism, developing in degenerates, and does not end in dementia. There are two varieties of this psychosis—the egocentric and the altruistic. The first type are usually persecutors, enemies of society, making claims for wrongs suffered that may or may not have some foundation in fact. Here we find the litigants, certain not understood writers and artists, certain hypochondriacal persecutors, amorous types, etc. In the second variety the ideas are abstract, the theories impersonal and concern science, philosophy, politics, religion, etc. In this group are found the inventors, reformers, prophets. They are dominated by altruistic sentiments and far from being persecutors are often generous philanthropists. Often, however, in endeavoring to realize their ideals, they become dangerous fanatics of all sorts—mystics, anarchists, regicides. The diversity of all these forms is only apparent. There exists no real difference between a litigious persecutor and the searcher for the philosopher's stone. Their psychoses are all characterized by two signs: the prevailing idea and the mental exaltation. The difference between this psychosis and the delirium of interpretation is well shown in the beginning. It has for its point of departure a fixed idea, while the delirium of interpretation arrives at a fixed idea only after a prolonged preliminary phase. The differential diagnosis is made difficult by several points they possess in common and also by the existence of combined psychoses or mixed types. The symptoms in common of these two forms are: the exaggeration of the personality, the tendency to mistrust, the permanent lucidity, the absence or rarity of sensorial disturbances, the absence of intellectual enfeeblement, and in some cases the apparent similarity of reactions.

3. *Psychoses Interprétatives Symptomatiques*.—This psychosis is characterized in the main by two things: the richness of the delirious interpretations and the absence or rarity of sensorial disorders.

This syndrome may appear at the beginning or in the course of the most diverse psychoses, acute or chronic, affective, toxic or degenerative in origin. It will be diagnosed at first as a delirium of interpretation but afterwards will be discovered the concomitant symptoms of the psychosis of which it is a part. It may be found associated with melancholia, the periodic insanity of degenerates, alcoholism, psychasthenia, senile dementia, dementia præcox, paranoid dementia and the *délire chronique* of Magnan.

(February, 1908)

1. International Inquiry on Mental Alienation in Prisons. F. PACTET.

2. States of Satisfaction in Dementia and Idiocy. MAURICE MIGNARD.

1. *Mental Alienation in Prisons*.—This inquiry was carried on as a questionnaire and from the information received the author reaches the following conclusions:

1. The presence of insanity in the prisons.

2. The frequently prolonged stay of the prisoner before his malady is recognized.

3. The insufficiency of the ordinary medical service of prisons, because of a more or less complete absence of psychiatric knowledge by the physicians, to make an early diagnosis of mental disorder in the prisoners.

4. The utility of an institution analogous to that created in Belgium, in 1891, under the name of "prison service of mental medicine," which provides for a quarterly inspection of the prisoners by three alienists.

5. The advantages that would result from the generalization of this institution.

2. *The Satisfied*.—A short article reporting a single case in an idiot. The author comments on the frequency with which mental states of sadness have been studied and the rarity of studies of states of happiness. He thinks feelings of well-being are indicative of a more serious condition than feelings of mental pain, which latter are so often encountered at the beginning of psychoses in transitory mental disorders.

(March, 1908)

1. The Instruction of Nurses in Asylums for the Insane of the Seine. H. COLIN.

2. Post-mortem Bacteriological Study of the Cerebrospinal Fluid of the Insane. M. BELLETRUD.

3. Chronic Systematized Psychoses Founded on Interpretations with Illusions of False Recognition. H. DAMAYE.

1. *Instruction of Nurses in Asylums*.—A description of the course for training nurses in the asylums of the Seine. Of local interest only.

2. *Cerebrospinal Fluid*.—The cerebrospinal fluid was examined post-mortem in twenty-nine cases. The authors conclude: The cerebrospinal fluid of the deceased insane frequently contains bacteria. The little influence of the time elapsed since death up to the planting of the fertile cultures is held to prove that the infections are in reality agonal and that the multiplication of the bacteria in the liquid is very slow. The divers varieties of staphylococcus are the habitual agents of these infections. It will be very difficult and probably even impossible to establish a relation between the nature of the cadaveric infection observed in the cadaver of an insane person and the nature of the mental affection of which he presented symptoms before death.

3. *Chronic Systematized Psychosis*.—A case history thought worthy of publication because of the two symptoms mentioned in the title, viz., a chronic systematized delirium maintained by errors of interpretation.

WHITE.

### Allegemeine Zeitschrift für Psychiatrie

(Band 64. Heft 6. 1908)

1. The Abnormalities of the Ascendants in Relation to the Descendants. TIGGES.

2. Genesis of a Sexual Abnormality in a Case of Kleptomania. W. FÖRSTERLING.

3. Testing of Intelligence in Epileptics and Normal Individuals by the "Witz" (Joke) Method. RUDOLPH GANTER.

4. The Internment of Insane Criminals. KROEMER.

1. *The Abnormalities of the Ascendants in Relation to the Descendants*.—A statistical study based upon the records of twelve German and Swiss Asylums, eleven public and one private. Unsuitable for abstraction.

2. *Genesis of a Sexual Abnormality in a Case of Kleptomania*.—An interesting account of the case of a woman degenerate upon an hereditary basis, who all her life had been possessed of an irresistible desire to steal, had been many times imprisoned, in consequence, and was finally committed to Herzberge. At twelve years of age, while being chastised by her mother upon her exposed nates, in consequence of a theft, she ex-

perienced, for the first time, an orgasm. After reaching maturity her feeling toward the opposite sex appeared normal, she became engaged to be married but the engagement was broken by her intended on account of her being sentenced for one of her acts of thievery. After this she lived a more or less loose life, having relations, from time to time, with different men. In this connection nothing abnormal was remarked except perhaps a slight tendency to masochism. In her twentieth year, being much excited upon the occasion of carrying out a theft, she experienced an orgasm at the moment of the accomplishment of the deed. From this time on the impulse to steal became much stronger, and when it assailed her she experienced oppression in the region of the heart, "heat rose to her head," there was globus, and she had the feeling as if she could not exist until the imperative call to steal was yielded to. Mixed with this there was also intense sexual excitement which was relieved in an orgasm as the theft was accomplished. The quality or value of the thing stolen appeared indifferent to her, the act of stealing procuring relief from the abnormal feelings. On one occasion being seized by a man and given a sound box upon the ear as she was escaping after a theft, she had again an orgasm. The relief of tension experienced after a theft making her indifferent to escape, it was noticed that if the orgasm had not occurred before, it always took place at the moment she was seized. The patient, however, never seemed to have lost normal sexual appetite, and affirmed that the feeling which she experienced upon carrying out a theft was much inferior to that in a normal sexual relation. The author regards the case as one of hysteria with strong degenerative traits.

3. *Testing of Intelligence in Epileptics and Normal Individuals.*—Description of some tests made by the author upon 20 male and 17 female epileptics, with control experiments upon 6 male attendants and 6 female servants. Selecting five jokes from "Fliegende Blätter" three with a picture and text, two with text alone, the author instructed each subject to read over the text, to point wherein lay the joke and what he found special in the effusion. Any remark upon the part of the experimenter which might work suggestively was carefully avoided. Of the 100 answers of the male patients 79 per cent. were incorrect, 21 per cent. correct. The female patients had 10.6 per cent. correct, 89.4 per cent. incorrect answers; the male attendants had 50 per cent. correct, 50 per cent. incorrect; the female servants 20 per cent. correct, 80 per cent. incorrect. He discusses the cases in detail and thinks that in this method we have a means of forming some idea of the method of association-forming, and the general mental standard of the individual.

4. *The Internment of Insane Criminals.*—Some remarks upon the methods of caring for the criminal insane in Germany, with a description of the new criminal asylum, "Festes Haus" at Neustadt in Holstein.

C. L. ALLEN (Los Angeles).

### Zentralblatt für Nervenheilkunde und Psychiatrie

(Volume XXXI. January 1, January 15 and February 1, 1908)

The case of Hartlieb. CARL WILLMANS.

*Hysterical Prison Psychosis—Periodic Endogenic Depression with Ophthalmoplegia Interna Hysterica and Hysterical Fever.*—The patient, Jacob Hartlieb, was born in 1875. His mother was afflicted with migraine. As a child he suffered from convulsions and, till the age of ten, from



enuresis. He was bright in school and fairly efficient at his trade (white-washer). He was peculiar, wilful, seclusive, sensitive and evinced no natural affection for his family. Three times he was punished for assault and battery. Like his mother, he was subject to frequent attacks of migraine, and during that time marked irritability, visual disturbances and hallucinations were manifest. He showed intolerance for alcoholic indulgence. On May 12, 1900, he learned that 500 marks were stolen from him. He became much excited, threatened to kill his sister whom he accused of this theft (had it not been for his mother he would have perpetrated this crime); was unable to work and took alcoholic drinks to excess. While in an intoxicated state, he committed rape upon a young girl. When he was arrested, he denied the commission of the deed. On the 26th of June, 1900, evidences of mental aberration were noticed. He expressed delusions of persecution and was dissatisfied with his environment. In the hospital he seemed dull, refused to coöperate, and was not spontaneously productive. A week later he was active, irritable, evasive, answered some questions, and made few isolated statements which indicated a persecutory trend. He showed unnatural apprehension, and gave many contradictory and foolish replies to simple elementary questions. In a few days he was more accessible. He gave some facts of his personal history; admitted hallucinations; was amnesic for his coming to the hospital; and exhibited partial insight into his own condition. In a week he became timid and complained of frequent headaches. His behavior was theatrical. He did not seem to know that his counselor visited him in prison, and had no recollection of coming to the hospital. He expressed delusions against the physicians, spoke of seeing men in his cell who were threatening and menacing. At times he was apprehensive, suspicious and irritable. On several occasions he was so excited that sedatives and straight-jacket were necessary. From September 10 to October 9, 1900, he was fairly accessible. He offered a good account of himself which was consistent with the anamnesis. He related adventurous experiences. Most of the time he was suspicious, downcast, and suffered from terrific headaches. He was delusional against one of the physicians on the staff and even accused him of poisoning. He occupied himself with reading, was talkative and not infrequently stated that his "head was just like Zenith" and inclined to be irritable. The bride's visit exerted a favorable influence upon him.

In December he was afflicted with severe headache (left-sided); vertigo, and fever developed without somatic causes (38-5). On January 14, 1901, he was sentenced to four years' imprisonment and, on the 23d of that month, he became depressed, at first responded to no questions, but later was more accessible. He perceived vile voices and images, and maintained delusional ideas. In March he grew quieter, and commenced to study French Grammar. Once fever developed without physical basis. In April headaches recurred and he was frequently attacked with vertigo. He was more suspicious, irascible and excited. He declared that while reading, letters floated in front of his eyes. In June fever was present (without bodily causes), right pupil was mydriatic without accommodation reflex and hemianalgesia on left side was demonstrable. These symptoms lasted only several days, but they had a tendency to recur. He had no remembrance of what had transpired during these episodes. However, in the interim he was brighter, more friendly with his environment, but still adhered to his former morbid ideas.

March 26, 1902, he was returned to prison. While there he had quite often fever, headaches, and his pupils were dilated. They gradually grew less in frequency. January 16, 1904, he was pardoned, mainly on the physician's certificate. After his discharge, he married, and worked at his former trade. Occasionally similar attacks recur, but they are of short duration, and not as intense as formerly. He shows good appreciation for his condition.

Wilmann considers the various possible diagnoses, such as katatonia, epilepsy and brain abscess (the last on account of the few focal symptoms of fever). He finally accepts the diagnosis of hysterical prison psychosis. He emphasizes the fact that the psychotic manifestations were reactionary to environmental influences and ophthalmoplegia interna was purely a hysterogenic expression.

M. J. KARPAS (New York).

### MISCELLANY

THE LESIONS OF THE CEREBELLUM IN PARESIS. Anglade and Letreille. (*L'Encephale*, 1907, October 25th, Vol. 212, No. 9, p. 3651.)

By a special method of staining neuroglia, here described, Anglade convinces us of the error of Weigert's opinion that the granular layer of the cerebellar cortex contains no neuroglia cells. Having illustrated the topography of the cerebellar neuroglia in general, the authors show, in a beautiful series of plates, the changes found in the cerebellum in about two-thirds of their cases of paresis. In the meninges, however, signs of inflammation exist in all cases, and these extend deeply into the septa. The process is characteristically transmitted to the subjacent neuroglia; which instead of appearing here as a few isolated fibers, then shows as a network with bands extending deep into the molecular layer, and may even form distinct cortical patches. They describe and illustrate, in detail, the lesions in the different layers, and conclude that this meningo-cortical process is characteristic of dementia paralytica, being found neither in the senile nor any other cerebellar atrophy. The appearances are almost schematic, and very easy to interpret, and are chiefly characterized by the preponderance of interstitial changes.

They allude to the forthcoming thesis of Latreille in which will be compared the above lesions with those found in meningo-encephalitic idiocy.

TOM A. WILLIAMS (Washington, D. C.).

HEMI-TONOCLONIC POST-HEMIPLEGIC SYNDROME—ITS RELATION TO OTHER POST-HEMIPLEGIC MOTOR TROUBLES. G. Etienne. (*L'Encephale*, 1907, 25th July, Vol. II, p. 1.)

A woman who became hemiplegic at 49, and remained severely contracted five years later, presented a state of erythism of the muscles of such a degree that the mere touch of a fold of the sheet would cause a violent clonus of the whole right lower limb. These clonic contractions are also produced when she attempts to rise or make any involuntary movement of the leg, and also when an effort of attention or an emotion supervenes. When a deliberate attempt is made to move the limb the clonus does not occur, but is replaced by a cramp-like tonic contraction. This tonic contraction occurs also at rest, while either movement may occur during sleep and awaken the patient. In consequence of their activity, the

muscles have hypertrophied on the right side. The author mentions the increased frequency of the seizures in the premenstrual period, and that they are followed by uratic deposits in the urine. There exists, also, hemianesthesia and analgesia of the partial thalamic type described by Dejerine, with its accompanying pain. Etienne attributes the syndrome to a lesion in the lower part of the thalamus, but more extensive than those described by Dejerine and Roussy; for he believes that it must implicate the cerebro-rubro-thalamo-cortical system, as well as the sensory tract in the ventral zone of the thalamus, the internal capsule, and a tract from the thalamus which he supposes to produce involuntary movements. He discusses the relation of the tonic state to that occurring in Thomsen's disease, and alludes to a case so diagnosed where, post-mortem, a glioma was found in each lenticular nucleus.

TOM A. WILLIAMS (Washington, D. C.).

ANATOMICAL OR PHYSIOLOGICAL AGE VERSUS CHRONOLOGICAL AGE. C. Ward Crampton. (Pediatrics, June, 1908.)

The training in the three R's dealt with but a small part of growing man. We want children to be educated to be men and women, and in that the old system did much, but with moral ideas rather than with a knowledge of what was growing at any given time. With the growth of insight, the individual differences of children are coming more and more into evidence. If education is the nurture of the budding possibilities, it must consider the bud as well as the hot-house.

Doctor Crampton comes vigorously to the front with a thesis: Physiological age should be taken as a basis for all record, investigation and pedagogical, social or medical treatment of children. The study of the boys of a New York high school gave him striking evidences of the difference between the boys who were mature when they entered and those who had passed from the pre-pubescent to the post-pubescent period. The period of transition to pubescence itself, taking the hair growth as a measure would then include those with more than an abundant lanugo and less than a very well defined covering. Taking school marks as a measure of success, the immature boys of all ages were far inferior (high school). After a review of the additional facts we have about the deep physical and mental revolution in puberty, Dr. Crampton passes to the educational problem. He finds that "at this time it is essential to the mental and moral health of the boy to engage in something in which he can succeed." He therefore recommends that boys who have attained maturity in the lower grades of the elementary school should be given opportunities for special practical courses. Above all things child labor legislation should consider this and not chronological age.

While it may seem rather revolutionary to make this neglected criterion the principal issue, it is certain that it strikes nearer the time of cleavage upon the mental instincts and capacities. Any one who knows the laws of development of instincts realizes how easily the proper time of their evolution can be missed and how imperfect the efforts are to replace the instinctive development by intellectual or other training later on. Concerning the practical difficulty of dividing higher classes of the elementary school and the lower class of the high school and the possible difficulty in directing the attention too directly to sex development, Dr. Crampton does not allow himself to be hampered in his argument, which is the only thing to do in such a paper.

For immediate application, it might seem wise to rather speak for a broader coefficient of maturity in which the sex maturity would get its due but not too *exposed* a position. If we should demand for the sizing up of a child the traditional items of efficiency in school tasks, fitness in conduct demanded for a certain school and age, we might put under the line the index of the relation of body weight to the average weight of the age; further, an index of general health and working capacity, all of which are relative to sex maturity. It would already be an innovation to demand an index of physical efficiency and health as an essential feature in classing children into definite classes, and if we add to this the puberty issue as a not too conspicuous point we shall be more likely to carry our point with school boards, etc.

The paper is a most vigorous and noteworthy appeal to good sense, and deserves the attention of every physician.

ADOLF MEYER (New York).

THE DIAGNOSIS AND TREATMENT OF MENTAL DISEASES IN CHILDHOOD.  
Raecke. Deutsche medizinische Wochenschrift, May 21, 1908.

Raecke divides all mental diseases in childhood into two parts: (1) congenital—idiocy, cretinism and imbecility; and (2) acquired—epilepsy, hysteria, catatonia, melancholia, mania, delirium accompanying infectious diseases, amentia, chronic paranoia and dementia paralytica. Epilepsy is usually manifested in early childhood by petit mal, twilight of consciousness and variability of mood. Not infrequently these epileptic stigmata pass unnoticed and the disease is not recognized till it is fully developed. Not in all instances can the peculiar mood and irritability in a hysterical child be differentiated from those of epilepsy. However, in the former they are usually reactionary to external influences. The relative frequency of manic depressive insanity and dementia præcox in childhood is not discussed, but allusions are made to catatonia, mania and melancholia. At the present state of psychiatric knowledge catatonia, mania and melancholia have no relative significance as far as clinical psychiatric realities are concerned and therefore for statistical purposes they are of no import. Delirium may occur in infectious diseases and it was observed in children of two or three years of age. Amentia or hallucinatory confusion is quite often seen in chorea minor. Chronic paranoia is extremely rare and the retrospective falsification of memory of childhood should not be regarded as an early symptom of this disease. Dementia paralytica often develops on a hereditary luetic basis in the twelfth year. In regard to treatment Raecke offers no specific measures or original ideas.

KARPAS (Ward's Island, New York).

## Book Reviews

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AN EXPERIMENTAL STUDY OF SLEEP. By Boris Sidis, Boston: Richard G. Badger, The Gorham Press, 1909. Price, \$1.00.

In this extremely interesting monograph, Sidis discusses the various theories of sleep and offers the following conclusions: "The experiments and observations made on lower animals, infants, children and adults, all point in one direction; they point to the fundamental conditions of sleep; to monotony and limitations of voluntary movements. Taking as my motto the dictum '*hypotheses non fingo*' I strictly follow the logic facts. Sleep is not so much due merely to cutting of sensory impressions, be they intense or faint, as to the monotony of sensory impressions which may, in fact, be intense and numerous. It is the invariability of sensory impressions that reduces the organism to the passive state which we experience as sleep."

He rejects the former ideas that sleep is due to blood circulation or to some toxic process in the body. He maintains sleep is not a morbid phenomenon, but an essentially physiological condition. He agrees with Clapere'de's biological views that sleep is a positive function of the organism and is an instinct. Again, "Physiologically and psychologically regarded, sleep is an actively induced passive state in relation to the external environment; the psycho-physiological systems have their thresholds raised in relation to external stimulations; the rise of threshold is induced by a mass of impressions possessing little or no variability, by limitation or by relative withdrawal of stimulations, or what is the same, by monotony of stimulations and by limitation of voluntary movements."

The subject is presented clearly and forcibly and one has no difficulty in following the writer. This is a common characteristic of all his works. The monograph is worthy of careful and thoughtful perusal and the argument is logical and appeals both to the neurologist and psychiatrist.

M. J. KARPAS, M.D.

OUTLINES OF PSYCHIATRY. By Wm. A. White, M.D. The Journal of Nervous and Mental Disease Publishing Co., 1907.

The first volume of the monograph series to be published by the JOURNAL OF NERVOUS AND MENTAL DISEASE has recently made its bow to the scientific world in the form of *Outlines of Psychiatry* by William A. White, M.D.

When it is attempted to condense the subject of Psychiatry into two hundred odd pages the result might be expected to be little more than an aggregation of definitions. That Dr. White has been able, in this limited space, to do far more than this, is a great credit to himself and a wholesome example to many others.

There is a general conception on the part of the medical pedagogue that it is altogether unnecessary for the medical student to acquire any knowledge on the subject of the insanities. Not only would the terms *hebephrenia* and *paranoia* call up no mental image on the mind of the young graduate, but if asked to examine a case of mental disorder, he

could no more estimate power of association, memory, attention, or determine whether delusions were systematized or not, than he could effect an amputation at the hip.

Dr. White has very wisely devoted the first seven chapters of his work largely to general symptomatology and the examination of the insane. The second chapter is concerned in the synthetical formation of a definition of the term *insanity*. He says: "A perfect definition of insanity is impossible because our knowledge of the subject to be defined is not complete." His definition is: "Insanity is a disorder of the mind due to disease of the brain manifesting itself by a more or less prolonged departure from the individual's usual manner of thinking, feeling and acting, and resulting in a lessened capacity for adaptation to the environment." The value of this definition is only thoroughly realized when it is compared with seven other definitions from writers of note. There is nothing unconventional in the classification adopted. Melancholia, *per se*, is only dealt with as the *involution* type, other than this coming under the manic-depressive heading. He differentiates four separate varieties of dementia præcox: *i. e.*, (1) Heboidophrenia of Kahlbaum; (2) Hebephrenia; (3) Catatonia; and (4) Dementia paranoides, to which he adds (5), Mixed forms.

This little volume is not intended to appeal to the trained alienist, but, what is of far greater importance, it is a lucid, trenchant epitome for the reading of which many physicians would be greatly enriched.

ALFRED REGINALD ALLEN.

PROFESSOR G. VASSALE AND THE SIGNIFICANCE OF HIS LABORS IN THE FIELD OF THE INTERNAL SECRETIONS (Prof. G. Vassale och dennes betydelse, etc. Swedish Text). Herman Lundborg. Reprinted from Upsala Läkaref.-Förh., N. F. xiii, No. 6.

A brief digest of thirty-three papers published by the distinguished Italian pathologist (either alone or in collaboration with others) on the experimental pathology and therapeutics of the thyroid, parathyroid, adrenal and pituitary glands. A majority of these papers first appeared in neurological periodicals.

L. PEIRCE CLARK.

LEHRBUCH DER NERVENKRANKHEITEN FÜR AERZTE UND STUDIERENDE. Von Prof. Dr. H. Oppenheim. Fifth German Edition. Verlag von S. Karger, Berlin, 1908.

One hardly knows how to review Oppenheim's textbook. There is so much to praise and practically nothing to condemn. Every neurologist is familiar with it. The fifth edition, like the fourth, is in two volumes; and it would seem as though the time would come when three volumes would be necessary to contain all the material of this work. For the first time references are given, and given with conciseness and yet as much thoroughness as the space allows. One is filled with amazement and admiration for the author's grasp on the literature; especially gratifying is the fair treatment of American and English authors, a statement that cannot be made regarding the product of all Continental writers.

The fifth edition contains much that is new, and especially striking are certain inserts. The most recent investigations are recorded, so that the book is fully up to date. The illustrations are mostly original; here and there a cut is found borrowed from some well known work, but the selection is always judiciously made. There is no need of describing the individual

chapters of this magnificent work; the book speaks for itself in a way that no description could. In the opinion of the reviewer there is not a better textbook on nervous diseases in any language. It is hoped that a new English edition of this fifth German edition may soon appear, as unfortunately many of our students are unable to appreciate the German work.

SPILLER.

A TEXTBOOK OF PHYSIOLOGY. By Isaac Ott, A.M., M.D. Second Edition. F. A. Davis Company, Philadelphia, 1907.

This work of eight hundred odd pages will be found to present the subject of physiology conventionally and not too deeply for the medical student. The part dealing with the nervous system seems to be more or less of a compilation of views garnered from such fountain-heads as Grünbaum and Sherrington, Morat and Edinger, and, as such, is presented in an orderly and lucid manner. Most of the cuts, in the section on the nervous system, are from well known works, and the comparatively few original illustrations leave much to be desired in draughtsmanship.

The standard of comparison in such a subject as physiology is, of necessity, high, and the best that can be said of Dr. Ott's work is that without being either original or exhaustive it is nevertheless safe.

ALFRED REGINALD ALLEN.

LES TRAITEMENTS DU GOÏTRE EXOPHTHALMIQUE. ACTUALITÉS MÉDICALES. Par Paul Sainton et Louis Delherm. J. B. Baillière et fils, Paris.

In this small brochure resembling others of the series, "Les Actualités Médicales," has been assembled the reports of Dr. Sainton and Delharin made before the French Congress of Medicine held in Paris in October, 1907.

They have styled the work "The Treatments" of Exophthalmic Goiter and not "The Treatment" since every patient with the disorder represents an individual problem.

While there is little new or startling in the brochure, it contains a brief but authentic resumé of modern knowledge on the subject.

JELLIFFE.

DIE NERVÖSEN ERKRANKUNGEN DES GESCHMACKES UND GERUCHES. Von Prof. Dr. L. v. Frankl-Hochwart. Zweite, Gänzlich umgearbeitete Auflage.

This second edition of Prof. v. Frankl-Hochwart's work on the disturbances of the sense of taste and smell will well repay careful reading on the part of the neurologist or physiologist. The bibliography is very ample and the development of the theme orderly and sequential.

The author shows no tendency to abandon the rather archaic and dubious theory that the taste fibers from the anterior two-thirds of the tongue, after passing up as far as the geniculate ganglion via the chorda tympani and facial, proceed to the second division of the trigeminal via the great superficial petrosal nerve and Meckel's ganglion and so through the Gasserian ganglion centralwards to the end stations in the pons and medulla oblongata.

Of course no discussion on this question could be complete or convincing unless due weight were given to Cushing's work. It is, therefore, interesting to note how ineffective Cushing's observations are made in their use by Frankl-Hochwart.

It is simply stated that, based upon thirteen cases in which the Gasserian ganglion was totally destroyed ("*nach totaler operativer Zerstörung*") in which the posterior part of the tongue presented no alteration in the sense of taste, and in which the loss of this sense on the anterior two-thirds, when present, only lasted a few days, Cushing forms his opinion that the trigeminus has nothing to do in transmitting taste fibers.

As a matter of fact the most important part of Cushing's hypothesis is carefully omitted by Frankl-Hochwart—I refer to the swelling of the axis cylinders and medullary sheaths on the lingual which, by their pressure, temporarily suspend the function of the chorda.

Taken in its entirety, the book is a valuable summing up of the work done on this subject.

ALFRED REGINALD ALLEN.

## Notes and News

The second international Course for Legal Psychology and Psychiatry will be held at Giessen (Grandduchy of Hesse) Germany, April 13 to 18, 1909. The course will be under the direction of Professor Sommer with the coöperation of Professors Mittermaier and Dannemann of Giessen and Professor Aschaffenburg of Cologne. Address all communications to Dr. Sommer, Professor of Psychiatry, University of Giessen.



# The Journal OF Nervous and Mental Disease

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## Original Articles

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### SACRAL TABES: A CASE WITH NECROPSY<sup>1</sup>

BY S. LEOPOLD

ASSISTANT IN NEUROPATHOLOGY IN THE UNIVERSITY OF PENNSYLVANIA

(From the Department of Neurology and the Laboratory of Neuro-pathology in the University of Pennsylvania)

Notwithstanding the fact that clinical cases of tabes, with preservation of the patellar tendon reflexes have been reported, the opportunity rarely arises to study this phenomenon pathologically. As far as I have observed, in a review of the literature two other cases, one by Achard and Levi, in the *Nouvelle Iconographie de la Salpêtrière*, Vol. XI, the other by T. Pineles, in *Obersteiner's Arbeiten*, 1896, have been reported with pathological findings, similar to those in this case. However, Redlich<sup>2</sup> and Pick<sup>3</sup> each have reported cases in which the sacral segments were chiefly involved, but these were cases of tabes dementia paralytica.

The patient, G. W., æt. 54, was admitted to the Philadelphia Hospital and was in the service of Dr. W. G. Spiller, through whose kindness the clinical history and pathological material were obtained.

The clinical history shows that one and one half years before admission the patient commenced to have sharp pains confined to his right thigh. Since his admission he has been confined to bed because of his ataxia. He has had incontinence of urine and feces during this period.

The family history and previous medical history are negative. Examination shows an ill-nourished, markedly emaciated old

<sup>1</sup>Read before the Philadelphia Neurological Society, November 27, 1908.

man. Right eye shows a cataract, the cornea is ulcerated. Left pupil very myotic and reaction to light is questionable. Ocular movements are normal, associated movements are good. There is emaciation in the muscles of the shoulder girdle and upper limbs. The muscles are flaccid and soft, hypotonicity is distinct in the upper limbs. Power, as shown by the grip test, is fair on the right and slightly more on the left.

Triceps and biceps tendon reflexes are present on each side.

The ataxia as shown by finger-to-nose test is slight. The lower limbs present the same general emaciated condition of the muscles; power and resistance to passive motion are diminished. In heel-to-knee test, ataxia is present in both limbs. There is no tenderness over nerve trunks, and no fibrillary tremors. Achilles tendon reflex is absent on both sides. No Babinski or ankle clonus.

The patellar tendon reflex is obtained on each side, and is very prompt, especially in view of the marked wasting of the thigh muscles. While the leg is not thrown forward on the right side, and only slightly on the left, the contraction of the quadriceps is marked.

No mental disturbance is to be noted; he remembers past events fairly well.

Several months later the patellar tendon reflexes were examined again by Dr. Spiller and found to be of normal response.

At a later date, some difficulty was experienced in obtaining these reflexes, but a prompt response occurred on the left side, as shown by contraction of the quadriceps muscle, with very little movement of the leg. On the right side the reflex was not quite so prompt. At this time the eye examination showed the pupils contracted and reaction to light questionable.

*Clinical Summary.*—The hypotonicity and ataxia, the shooting pains of the lower limbs, the loss of Achilles tendon reflexes, the vesical and rectal symptoms, the myosis, make it clearly a case of tabes dorsalis. The prominent feature of the clinical history is the nearly normal condition of the patellar tendon reflexes with so pronounced tabetic symptoms.

Sections were examined from the following segments of the spinal cord: The eighth cervical, eighth thoracic, first, second, third and fourth lumbar. From the fifth lumbar the cord was cut into small pieces, as it was impossible to divide it according to the root segments. All the sections were stained with the Weigert, hemalum and Nissl stains.

From the last sacral segment to the fifth lumbar the posterior columns were markedly degenerated, especially on the right side, involving the whole of the root entrance or cornu radicular zone of Marie, which contains the medium and long fibers, forming the reflex collaterals and ascending fibers of the posterior columns. On the left side the root entrance zone was much less



FIG. 1. Photograph of a section from the fourth lumbar segment. The hole in the anterior column indicates the right side.



FIG. 2. Photograph of a section from the third lumbar segment. The hole in the anterior column indicates the right side.



destroyed and many normal fibers entered the posterior horn. The pathological picture corresponded to the clinical findings of vesical and rectal disturbance, and loss of Achilles tendon reflex. In view of the preservation of some of the reflex collateral fibers on the left side one might have expected some evidence of the Achilles reflex on this side. However, we know that it is not necessary for all the fibers to be destroyed to cause the failure of the reflex. This is well proven in those cases of tabes with secondary hemiplegia in which a return of knee-jerk occurred.

*Fourth Lumbar Segment.*—At this level the root entrance zones are markedly degenerated, the sclerosis extends to the posterior horns. The posterior roots are very much degenerated, while the anterior roots are normal.

*Third Lumbar Segment.*—In this segment the sclerosis is wedge-shape, with its base at the periphery, the apex at the posterior commissure. This triangular area of degeneration is more marked on the right side, its extent being less than in the fourth lumbar. This is the highest level at which the posterior root fibers entering the cord are distinctly degenerated. The sclerosis of the posterior roots of this segment is slight and nearly equal on the two sides, though the right side is a little more degenerated. The anterior root fibers are normal. The pathologic findings, in this segment which shows the nearly complete preservation of the reflex collaterals, explain the clinical phenomenon of the preservation of the patellar tendon reflex.

*Second Lumbar Segment.*—The triangular area of sclerosis on the right side is smaller than in the preceding segment. A corresponding degree of change is noted on the left side, the area being less pronounced. The root entrance zone on the right side is considerably sclerosed along the periphery of the cord, although the fibers entering at this level seem to be intact. This degeneration is probably due to the loss of ascending fibers from lower segments. On the left side the root entrance zone is about normal. The posterior root fibers show some slight sclerosis. The anterior root fibers are normal.

*First Lumbar Segment.*—In this segment the root entrance zone on the left side is normal, the right root entrance zone shows very slight sclerosis. The triangular area on the left being faintly noted as similar to the right side. The left posterior root fibers are almost normal, the alteration is so slight as to be questionable, the right posterior root fibers show very slight degeneration. The anterior root fibers are normal. In this section as well as in the second and third lumbar segments, the root fibers were cut from the cord and many sections studied.

*Eighth Thoracic Segment.*—The column of Goll on the right side is much more degenerated than on the left. The columns of Burdach, root entrance zones, and cornu-commissural zones on

each side are not involved. The anterior and posterior root fibers show no changes.

*Eighth Cervical Segment.*—This segment shows a similar picture as seen in the eighth thoracic. The column of Goll on the right side is much more degenerated than that on the left. The columns of Burdach are not involved. The same is true of the root entrance zone and cornu-commissural zone of each side.

With the hemalum and acid-fuchsin stain all the segments show the same picture. The pia arachnoid shows a slight thickening with slight round cell infiltration.

With the Nissl stain the cells of the anterior and posterior horns are found considerably pigmented.

*Pathological Summary.*—The degeneration of the posterior root zone was pronounced through all the sacral segments, and extended as high as the fourth lumbar segment. It was slight at the third lumbar segment, and in the middle thoracic and lower cervical segments only the columns of Goll were involved. The degeneration was throughout more pronounced on the right side and involved the posterior root zone from the fourth lumbar down on the right, whereas on the left side in the corresponding area many normal root fibers entered the posterior horns.

In this case preservation of the patellar tendon reflexes and the disappearance of the Achilles tendon reflexes are satisfactorily explained by the pathological findings. Ordinarily in tabes the lumbar segments are involved, and the typical symptoms arise, including loss of patellar reflex. In this case the sacral segments showed pronounced degeneration, the lower lumbar segments were involved, but the pathway for the reflex arc had not been destroyed. The slight involvement of a few of the fibers of the reflex collaterals of the right side corresponds to the finding of a slight diminution of the right patellar tendon reflex.

Achard and Levi, in 1897, reported a similar case, in which the diagnosis of tabes was made during life. The persistence of the reflexes was the chief feature. The patient had the Argyll-Robertson pupils, tabetic gait, and Romberg sign. The reflexes were examined at different times and showed no diminution or exaggeration. The microscopical examination showed, as in my case, extensive sclerosis in the sacral segments, especially in the inferior, while the upper sacral and all the lumbar segments showed a limited area of sclerosis. T. Pineles describes a case of sacral tabes in a patient aged 46 years, in which besides

lancinating pains and Argyll-Robertson pupils, the left patellar tendon reflex was lost, while the right patellar tendon reflex was obtainable only by reinforcement. There was no ataxia or Romberg. He speaks of it as a case of incipient tabes, in which the disease began in the lower spinal segments.

Redlich<sup>2</sup> describes in his monograph on tabes a case of tabes dementia paralytica in which the preservation of the patellar tendon reflexes was noted, together with loss of Achilles tendon reflex. The tabetic changes were found in the lower lumbar and sacral segments. In the upper sacral and lower lumbar segments the picture was that of an incipient process, while the lower sacral segments showed scarcely any changes. In my case an incipient process was not to be considered in as much as the degeneration throughout the sacral segments was so extensive.

In Pick's<sup>3</sup> case there was left facial paralysis, and the left patellar reflex was absent, while the right was only obtainable by Jendrassik's method. Sections showed intactness of the reflex arc in the lumbar segments.

Babinski and Nageotte, in 1905, reported their findings in a case, but according to the findings it was not one of the sacral type.

The unique process in their case I will discuss later; let us now return to the question of the patellar tendon reflex as an early symptom. What emphasis should be laid upon this symptom? Westphal in his first study of the knee-jerk said, "it is present when the posterior columns are involved only as far as the lower thoracic and upper lumbar segments, and also when the lateral pyramidal tracts are involved." Clinical cases have been reported by Hamilton, Erb, Theme, Berger and others, in which the patellar tendon reflexes were preserved. Berger found it preserved in 2.4 per cent. of 82 cases examined. Abadie found in 196 cases 13.5 per cent. with preservation of the patellar tendon reflexes. The studies of Jackson and Taylor, Goldflam, Mamlock, Dercum and others in cases of tabes with secondary hemiplegia and return of the patellar tendon reflex serve to show us the variation of this reflex.

To-day more stress is laid upon the disappearance of the

<sup>2</sup> Redlich, E. "Die Pathologie der tabischen Hinterstrangserkrankung," 1897.

<sup>3</sup> Pick. "Anatomische Befund bei einseitigen Fehlen des Kniephänomens." Arch. f. Psych., Bd. xx.

Achilles tendon reflex as an earlier symptom. Bregman quotes Babinski and Goldflam's view that the Achilles tendon reflex is more frequently and earlier altered than is the patellar reflex. The latest studies of collected cases of tabes seem to indicate the correctness of this statement. Kollarits, a Hungarian observer, found the Achilles tendon-jerk absent in 65 of 100 cases examined, while the patellar tendon reflexes were absent in 56, thus making 11 cases with absent Achilles tendon reflex as the only sign. Sarbo analyzed 92 cases and found the patellar tendon reflex abnormal in 87 per cent., the Achilles tendon reflex abnormal in 91 per cent. Bregman asserts from these, together with the sensory findings, that the sacral portion of the spinal cord is the earliest portion affected in tabes.

How shall we account pathologically for these variations in the patellar tendon reflex? We have seen that tabes may occur in which the patellar tendon reflex is preserved; again, we see cases in which the reflex disappears only to reappear. The view of most observers to-day is that the integrity of the patellar and Achilles tendon reflex depends upon two factors: first and chiefly, the preservation of the fibers forming the reflex arc, and secondly, upon a cortical influence whose pathway may be in the pyramidal tract, or in the cerebellar tract. If the reflex arc is entirely destroyed, then the patellar tendon reflex is entirely lost, and this is the picture described in most cases of tabes, pathologically the most pronounced degeneration is seen in the lumbar segments. If these segments are only partially destroyed then the patellar tendon reflex may or may not be present, or it may be absent and return. This phenomenon was seen in those hemiplegic tabetics, and depends upon the removal of cortical inhibition by degeneration of the pyramidal tracts.

In Pick's case where there had been return of the knee-jerks, the pathological findings explained the symptoms, in that only a portion of the reflex arc had been destroyed, and with the secondary advent of the destruction of the pyramidal tract the removal of inhibition occurred upon the few fibers of the reflex arc left intact. In Achard's case, in Redlich's case and in my case, the preservation of the reflex was explained by the involvement only of the sacral and lower lumbar portions of the cord.



Babinski and Nageotte<sup>4</sup> found an inverse systematization in their case. A young man, 25 years of age, had tabetic symptoms, with preservation of the patellar tendon reflex. On examination of the sections the degeneration involved the long fibers of the posterior roots, or in other words, the postero-external zone. The oval field of Flechsig and the columns of Goll presented lesions of the same intensity while the short or medium systems of fibers, those usually attacked first in this disease, escaped. This is contrary to the usual onset of this disease, consequently they speak of it as an inverse systematization in tabes. No mention, however, is made of the sacral segments. The important observation to be deduced from my case, and those cited is that, clinically, tabes should not be overlooked in those cases in which the patellar tendon reflex is preserved. The early disappearance of the tendo-Achillis reflex is attaining greater significance, and as indicated above, among some observers, as Babinski and Bregman, is of greater value as an early sign.

Besides this case also shows the polymorphic nature of this disease, and to-day instead of only the lumbar type, the cervical type, the optic type, and paralytic type, we have pathologically and clinically the sacral type.

I wish to take this opportunity to thank Dr. Spiller for his kind assistance in the examination of the pathological sections.

<sup>4</sup>Babinski and Nageotte. "Note sur un cas de tabes a systematization exceptionnelle." Soc. de Biol. de Paris, 1905.

REPORT OF A CASE OF ADIPOSIS DOLOROSA,  
SHOWING IMPERFECT DEVELOPMENT  
OF THE RIBS AND VERTEBRÆ<sup>1</sup>

BY GEORGE E. PRICE, M.D.

ASSOCIATE IN NERVOUS AND MENTAL DISEASES IN THE JEFFERSON MEDICAL  
COLLEGE, ASSISTANT VISITING NEUROLOGIST TO THE PHILADELPHIA  
GENERAL HOSPITAL,

AND HARRY HUDSON, M.D.

DEMONSTRATOR OF ORTHOPEDIC SURGERY IN THE JEFFERSON MEDICAL COLLEGE

M. K., female, age 28 years, white, Hungarian; occupation, candy wrapper; applied at the Orthopedic Dispensary of Jefferson Hospital on May 21, 1908, complaining of pain in the back and hips. The personal and family history will be here omitted as it will be fully presented in the neurological report. At this time, she had on a spinal brace which she had been wearing for about a year and a half. Examination of the patient's back disclosed a marked high dorsal kyphosis with the apex at about the level of the fourth dorsal vertebra; a left lateral curvature most marked at about the region of the eighth dorsal vertebra. While there was no real ankylosis, the column was markedly rigid, a condition possibly due to the long-continued fixation of the spine by means of the brace. Further inspection of the other bones and joints revealed nothing of note. An X-ray was taken by Dr. Willis F. Manges, of the back including the entire spine and the pelvis, and here we had revealed an explanation of the distortion as noted above. We find the cervical vertebræ large and as well developed as we would expect of a woman of this patient's build. When we come to examine the dorsal vertebræ we find quite a marked difference, not as to the distortion alone, but we find a diminution in size both in the horizontal and vertical contours of the bodies of the vertebræ, and, as far as can be made out, of the processes as well. The ribs, while also reduced in size, have suffered the alterations in diameter only, as they are of about normal length,

<sup>1</sup> Read before the Philadelphia Neurological Society, October, 1908.

the patient presenting a fair chest measurement. The X-ray of the lumbar spine and pelvis revealed no abnormalities, as they, like the cervical vertebræ, were much larger and in every way approximately normal. It is reasonable to suppose that the distortions present were due to the mechanical changes following the inequality in the development of the spinal segments, just as Bohm has called attention to the fact that numerical variations in the vertebral column apparently play a part in causing scoliosis. As to the cause of this apparent localized arrest of bony development, we may gather from the literature that the theory regarding the pituitary body as the seat of control of osseous development is fairly well substantiated. The post-mortem examinations that have been made in cases of giantism and acromegaly, seem to show that here the pituitary body is usually enlarged, while in dwarfism and cretinism, it is as markedly diminished in size. Hutchinson says, "If I were to be asked to locate a 'growth center' for the entire body upon embryonic and morphological grounds, I should unhesitatingly select the region of the pituitary body as the site of such a center."

Mr. Hastings Gilford, at the first meeting of the Royal Medical and Chirurgical Society, read a paper on a condition of mixed premature and immature development, the patient a youth of eighteen years whose skull was as yet undifferentiated into two tables and was of a thinness and appearance of a child of two months old; the scapulæ were unusually small while the clavicles were so tiny as to remind one of the "merry thought" of a chicken. On the other hand, the lower ends of the humeri and of the femoræ and knuckles of the fingers and toes were relatively large and conspicuous. While this case was one of dwarfism, it illustrates marked inequality in the degree of growth of the several parts. He called the condition micromegaly and divided the cases into two primary groups: (1) micromegaly affecting the whole body, (2) micromegaly affecting isolated structures. The latter grouping suggests such a case as ours. He again writes of a condition, Ateleiosis, and defines it as a disease characterized by a conspicuous delay of growth and development, and says that like cretinism, it may appear either before birth, during infancy or early childhood. In all likelihood, the disease as a rule becomes so ill defined, when it appears in these later years, that it can only be recognized as a mere eccentricity of normal devel-

opment or is lost altogether in those variations to which all life is subject.

Osler, in his text book, under the heading of acromegaly quotes the analysis by Furnival of the recorded autopsies, 34 in number. Changes in the pituitary gland were found in all and in the majority there were hypertrophy or tumor. The hypertrophy of the gland in the majority of cases was confined to the anterior or the glandular portion of the body, and pathologically is a true hypertrophy. Hutchinson cites 12 cases of tumor formed of the gland in which no acromegalic symptoms were present. During the examination of the patient as recorded, it became apparent that the conditions presented an additional symptom group that suggested adiposis dolorosa. The case was then referred to the Neurological Department.

*Neurological Examination, May 22, 1908.* The family history is as follows: Her father died from injuries due to a fall. Her mother is living and well. She has one sister living and well: one sister died of diphtheria and one of pneumonia; one brother died of appendicitis, one in a "spasm" and a third when fourteen days old. Her previous history presents the usual diseases of childhood. She has suffered with headaches since her ninth or tenth year, being unrelieved by glasses. Menstruation commenced in her eleventh year, has been regular, and not especially painful. During her early menstrual history, she would frequently flow for two weeks, but in the past few years, she has passed to the other extreme, menstruation lasting about one day. She married when seventeen years of age, but has never been pregnant. Her husband is living, "well and strong." Seven years ago, she had a dilatation and curettement of the womb for menorrhagia, and two years ago was operated upon for "tumor of the left ovary." She has never had any serious illness, and uses alcohol very moderately. No history of syphilis could be obtained.

For the past eleven years, she has had pain in her back and left hip, accompanied by a certain amount of deformity due to spinal curvature. During the last year and a half she has been wearing a spinal brace, but the pain was unrelieved.

For the past two years, she noticed that her flesh was very painful, particularly about the back and knees; this pain was both spontaneous and induced by pressure or manipulation of the flesh.

She noticed that during the past year, she would often have "black and blue spots," appearing without any apparent cause. Paresthesias (crawling sensation and numbness) have at times been present, usually over the left side and thigh. There has been an increase in her weight from 105 pounds seven years ago, to 166 pounds, her present weight.

Asthenia has been present, but not marked. To use her own words "I feel so tired since I got so fat." Vomiting has occurred at intervals for the past three years. She complains of dyspnea and tachycardia but perspires freely. She denies flushing.

Upon examination, the patient was found to be moderately obese, with circumscribed masses of fat about the shoulders and knees, and upon each side of the back just below the scapulæ. These masses were extremely painful upon manipulation. There was present a moderate kyphosis.

The gait and station were normal, the pupils equal and reacting freely to light and accommodation. There was no paralysis nor muscular atrophy, but the general muscular strength as tested by resistance, grip, etc., was distinctly weak. The reflexes of the upper extremities were apparently normal, while the knee jerks were distinctly exaggerated. She presented no tremors. Sensation was normal or slightly diminished to touch, pain and temperature changes. No mental abnormality was observed beyond a mild hypochondrical tendency and a proneness to react to suggestion.

In consideration of the acknowledged role played by the pituitary as influencing bony changes and the frequency with which pituitary changes have been found in adiposis dolorosa, we believe this case to be of interest as showing evidence of arrested bony development in a patient presenting the typical symptoms of adiposis dolorosa. The bony condition, it would appear, is due to some disturbance in the function of the center regulating skeletal growth, possibly the pituitary body. And may not some later change in function of this same gland or the thyroid, be responsible for the syndrome of adiposis dolorosa? This of course can be but a matter of conjecture but one we believe worthy of further consideration. As to treatment, the patient has been conjointly treated in both departments receiving graded exercise and thyroid extract with the result that she can dispense with the brace comfortably and complains less of the pains and weakness.

# AMYOTONIA CONGENITA: THE RECORD OF A CASE WITH THE ACCOMPANYING CLINICAL FINDINGS<sup>1</sup>

BY THOS. J. ORBISON

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One other case of amyotonia congenita has been recorded in this country: by Spiller in 1905. All told only twenty-seven cases have been reported. Of these the pathological findings have been reported in two cases, Spiller's being the first.

In 1900 Oppenheim published the first paper calling attention to the clinical findings that characterize this disease of infancy and since then it has borne his name. In the *Neurologisches Centralblatt* of Nov., 1908, Rothmann discusses the disease; and in *Brain* of May, 1908, James Collier and S. A. K. Wilson write at length upon this subject and report cases. I will take the liberty of using some of their data.

*Definition.*—The latter quote Oppenheim as emphasizing certain essential diagnostic characteristics as follows: "A condition of extreme flaccidity of the muscles associated with an entire loss of deep reflexes, most marked at the time of birth but always showing a tendency to slow and progressive amelioration. There is great weakness but no absolute paralysis of any muscle. The limbs are most affected, the face is almost always exempt. The muscles are small and soft but there is no local muscular wasting. Contractures are prone to occur in the course of time. The faradic excitability in the muscles is lowered and strong faradic stimuli are borne without complaint. No other symptoms indicative of lesion of the nervous system occur."

The case herewith recorded corresponds, in what seem to me to be the essentials, with the above description. On the other hand there are certain points in which it so differs from the other reported cases that a cursory inspection might have placed the

<sup>1</sup> Presented before the Pasadena Branch of the Los Angeles County Medical Society, November 2, 1908.

diagnosis in doubt; but these very points add to the interest of the case. They will be referred to later in detail. In addition to the clinical findings is the report on the blood picture by Dr. Donald Frick, of Los Angeles, which is extremely suggestive and gives new interest to this subject (I can find no other record of blood findings).

*Etiology.*—Nothing definite has been elicited as to the causative factor in this disease, though Rothmann says it is due to disturbance of the anterior horn cells in fetal life. The testimony has been mostly negative. In none of the cases save this one has there been bad heredity; infectious disease has played no part in the great majority of the cases; trauma, either prenatal or postnatal, has not been a factor; frank maternal disease can likewise be dismissed. In a late paper of mine discussing the causative factor of hemiatrophy it was suggested that the "unknown prenatal toxic element" (of some writers on that subject) has had special predilection for the trophic elements of the nerves themselves—following out the theory of de Watteville ("The Nervous System and Its Diseases," Mills, page 195) who holds that "trophic changes in muscle may be independent of paralytic phenomena and may affect both muscles and nerves or muscle alone. If the lesion is confined to the trophic center the muscle atrophies but is not paralyzed and presents qualitative alterations in reaction." It is conceivable that the present condition could be explained by the prenatal action of the "unknown toxin" upon the trophic elements of the nerves themselves causing atony and atrophy of the muscles.

*Symptoms.*—Pregnancy and birth have been normal in practically all of the recorded cases but the first symptoms have been noted directly after birth in all but five and within the first year in all of these. Many of the children were small and thin at birth while others normal in appearance. In one case it was noted that when the child was held the pendent portions of the body and limbs hung limp like a "bundle of yarn." In our case it was thought to be dead because it hung so motionless (it was not a "blue baby"). In most of the cases there was a flaccid condition of joints and muscles so that the limbs could be swung about like flails. The first symptom to be noted in some of the cases was the inability to hold the head up or, when the time came, to crawl and walk or even, in some cases, to turn over while

lying down. As the result of the amyotonia the most bizarre attitudes could be assumed by the little ones—excessive flexion and extension of hands and feet with wide ranges of rotation of certain joints that could outstrip the feats of the contortionists. In several of the cases there came sooner or later contractions more or less marked and most often at the knee joints. In our case (Fig. 1) there is this contraction with some stiffness of the joints rather than a limpness. In all the cases the facial muscles escaped and the children could suckle. In all but the one here recorded the

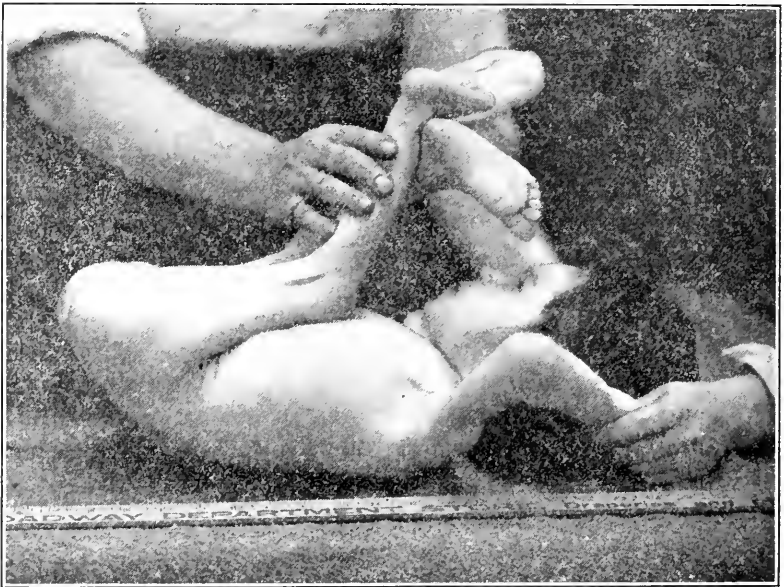


FIG. 1.

mentality was good and in this one also it was good up to the sixth month or later, if the parents are to be believed. In all the cases there were two striking conditions noted in addition to the amyotonia, viz., diminished but present response to strong faradic currents and a most remarkable toleration of them. In our case currents were used that could ill be borne by a normal individual and the child seemed to enjoy them.

In most of the cases there was loss of the deep reflexes. In our case they are present; they were even exaggerated during a rise in temperature accompanying an otitis media. In none of



the cases has there been any involvement of the sphincters. Progressive improvement has been the almost universal verdict, but it is so slow that after seven years a normal condition has not been reached in some of the children. As to the distribution of the amyotonia, it is symmetrical and from the neck down. The hands and feet are generally long and narrow (Fig. 1).

*Differential Diagnosis.*—Hitherto the diagnosis lay between amyotonia and the myopathies but this case of ours makes the diagnosis necessary between it and amaurotic family idiocy. In fact the presence of marked disturbance of vision and mentality in a case such as this is might easily cause that diagnosis to be the first to be thought of. In this child the history points out that she was “born as though dead” but improved later, there was normal mentality up to the sixth month and at that time sufficient cause in this instance—she was the child of an alcoholic and syphilitic father—to produce mental involvement such as she has; there is absence of marasmus; the pathognomonic condition of the eye-grounds is absent; there is no involvement of any other member of her family; she is not a Hebrew by descent. Thus it would seem that the mental defect is accounted for and is an extra condition to the amyotonia.

As to the diagnosis between amyotonia congenita and the myopathies—the former tends to progressive improvement; there may be a return of deep reflexes; there is no local muscular wasting or fibrillary spasm; the electrical reaction is not that of the myopathies; there is the characteristically increased tolerance of faradic currents but no absence of response. There is another condition to be considered—familial amyotonia. In 1902 Beever published a case with pathological findings in which there was “absolute flaccid paralysis of all the muscles of the body except those of the face, neck and diaphragm. The intercostals were completely inactive. Faradic excitability in the affected muscles was completely lost.” Thus, the clinical picture was very like amyotonia congenita. The pathological examination was made by Batten and showed a normal brain, cerebellum and medulla with normal nuclei of the cranial nerves, but with intense atrophy of the anterior horn cells throughout the spinal cord. “There was intense recent degeneration of the fibers of all the posterior columns but the posterior roots were not degenerated. There was great atrophy of all the affected muscles.” In Beever’s case

there were four children of a family of eight who were similarly affected. In 1906 Sorgente published two cases, occurring in the same family, under the title of Oppenheim's disease but they evidently, according to Collier and Wilson, belonged to the familial type described by Beevor. They were twenty-seven days and five days old, respectively, at the time they were first observed and they died forty days and twenty days old, respectively. In them there was no response to faradic stimulation. In both cases death was preceded by convulsions that were general in extent.

*Pathology.*—Spiller published the first pathological report of a case of amyotonia congenita, or, as he expressed it, "myatonia congenita," in 1907. Later in the same year Baudouin reported his findings in the second case in which necropsy was performed. The important points in Spiller's findings are: (1) "The microscopic examination shows that there was an arrest in development of the muscle fibers, and that the central nervous system and peripheral nerves were normal." (2) The muscles have a hyaloid appearance, the fibers are small and differ directly as the muscle tone of the locality from which it was taken. (3) The thymus gland was normal but there was some involvement of the lymphatics and liver. In Baudouin's case there was a like disturbance of the muscle fibers. He noted a sclerotic condition of the thyroid. He found the anterior root of the left third lumbar pair of nerves to be four or five times less in size than its posterior root, whereas in the normal individual it should be about half the size. He also noted some changes in the quality of the anterior horn cells and in the peripheral nerve trunks that suggested to him an arrest of development of nerve fibers.

The case herewith recorded was referred to my service in the Los Angeles Children's Hospital, by Dr. Donald Frick, Physician to the Staff. His examination of the blood picture will be referred to later and is the first blood examination, in these cases, that I know of.

*History.*—I. L., Female, aged four years (Sept., 1908).

*Family History.*—Her father is a Mexican and had gonorrhea and syphilis about twenty years ago. He was for many years a drinker of alcoholics in excess; his father is alive and healthy and his mother died of tuberculosis. The patient's mother is a healthy German. She has had no miscarriages and has four other children who are healthy and normal. The patient is her third child.

*Previous History.*—Quickening was felt. The child was born

at full term without instruments. She was thought to be dead when born because she made no movement or cry; she was not a "blue baby." Up to six months of age her parents considered her normal. At that time she was exposed to a long, hot wagon trip in the sun. It is asserted that after that she was never strong. Soon after it she began to have crying spells and exhibit mental irritation; during the spells she would pound her head and pull her own hair. When about a year old she began to have convulsions. They were always right-sided and began with twitchings of the face and arm. During them there were noted stertorous breathing and a decided curling of the child over to the right side. These recurred quite often during a month's time. At that time, the father says, a "Spanish doctor" prescribed a "blood medicine" for her and her convulsions promptly ceased. The father seems to be clear about her history but due allowance must be given to the fact that the events related happened four years previously. She has never sat up alone, has never talked and has never fed herself. She was not breast-fed as her mother could never suckle any of her children, owing to a lack of milk supply; all the children were fed on condensed milk. Before coming to the hospital she was wont to cry and grit her teeth but since her admittance and previous to an attack of bronchial catarrh and otitis media, she behaved well and seemed contented.

*Physical Examination.*—(Previous to the onset of the otitis media.)—The child is very small for her age but is symmetrical. She is not wizened or old looking. Her skin is clear and soft. It is evident that she cannot see well or hear acutely. Her hair is copious and the teeth are well shaped and of the normal number. The palatine arch is high. There is some internal strabismus that is not constant. The head is large for the size of the body. She will not hold anything that is placed in her hands. The hands and feet are long and narrow and well shaped. There is some flaring of the lower ribs together with a lateral bulging of the upper abdomen. Her general appearance suggests rachitis.

The muscles all over the body (except the face) show marked lack of tone. They are fairly well used by the child but the joints are stiff, giving a false impression of the muscles. The muscles themselves are soft to the touch, look almost transparent, may be identified. While the child is using one set of muscles the opposing set will be lax and flaccid. She cannot lift her head or hold it up nor can she sit up unaided (Fig. 2). Walking and standing are impossible. There is considerable contracture of the hamstrings (Fig. 1).

The electrical reactions are characteristic. There is response on the part of all the muscles to the faradic current but it is qualitatively lessened. The child can take and seems to enjoy currents that would normally cause much pain. Pain sense is not lacking and she quickly draws away from a pin. Patting and rubbing seem to be especially acceptable to her.

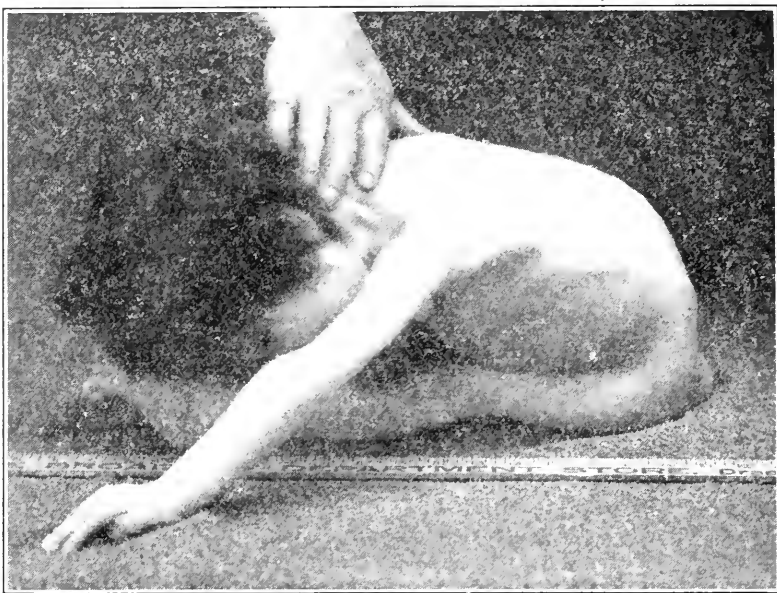


FIG. 2. The child is not held down, but only balanced, to keep her from falling sideways.

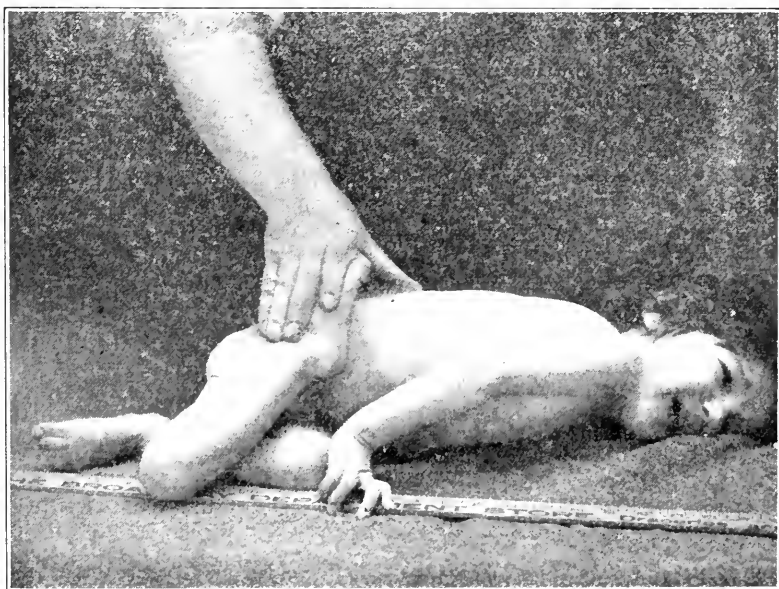


FIG. 3. The evident distress of the child was not due to the bending of the foot but to being turned on her face, which she disliked. There were no tears.

*Reflexes.*—Knee jerks are present on both sides but can be obtained best only when the heels are supported in the hand of an attendant. The skin reflexes are diminished or absent. There is no abdominal reflex. (During the rise of temperature that accompanied the otitis and catarrhal disturbance the child was restless and the knee jerks were exaggerated.) There is no disturbance of function on the part of the sphincter muscles. There is no disturbance of the urinary or alimentary tracts.

*Examination of the eyes and ears* was made very carefully by Dr. C. H. Montgomery, of Los Angeles, and is as follows: "Lids are normal in shape and structure; they show no abnormal conditions. Lashes are normal in situation and arrangement. Conjunctivæ are somewhat pale but otherwise normal. Scleræ normal. Irides are normal in shape and pigmentation. There is no evidence of inflammatory conditions. Corneæ are perfectly clear and normal. Pupils are active to light and in accommodation. Extrinsic muscles: The right eye shows an internal strabismus of a moderate degree. No muscular paralysis evident and the range of movement is apparently normal in every direction except the one noted. There is no nystagmus.

*Fundi.*—The eye grounds are of normal color. The discs are paler than normal, the left more so than the right. The edges of the discs are rather sharply marked. The cupping of the disc on the right side is suggestive of an atrophic condition. The blood vessels are not numerous and the branches are less than in the average eye. The maculæ show nothing of note. The retinæ and choroids show nothing suggesting a past inflammation. The vitreous and lenses are normal. Perception of light, peripherally, is markedly below normal.

*Ears.*—They are normally placed and show no stigmata. The membrana tympani on the right side shows a perforation near the periphery near the bottom; from this comes a sero-purulent discharge (the examination was made at the beginning of the catarrhal and aural disturbance which was not present on admittance to the hospital).

Dr. Frick made a thorough physical examination and reported, in part, as follows: Lungs normal. Heart is normal in size. A systolic blow is heard best in the pulmonic area—probably hemic; other sounds normal. The liver and spleen are not palpable. No tumors are felt in the abdomen. The genitalia are normal. Urine negative.

*Blood Examination.*—Hemoglobin, 45 per cent.; erythrocytes, 2,600,000; leucocytes, 9,000. Differential count: Polymorphonuclears, 60 per cent.; lymphocytes, 30 per cent.; large mononuclears, 6 per cent.; eosinophiles, 4 per cent.; myelocytes, 2 per cent. Widal Test, negative; malarial organisms, none.

*Diagnosis of Blood Condition.*—A secondary anemia of infantile type.

# Society Proceedings

## NEW YORK NEUROLOGICAL SOCIETY

December 1, 1908

The President, DR. B. SACHS, in the Chair

### A CASE OF OTITIC BRAIN ABSCESS OPERATED ON THIRTEEN YEARS AGO

By Gorham Bacon, M.D.

The patient was a man of 40 who was operated on by Dr. Bacon thirteen years ago for a temporo-sphenoidal abscess of the left side. At that time he gave a history of chronic otorrhea of sixteen years standing. Four days prior to coming under Dr. Bacon's observation he complained of a severe pain in the left ear, with profuse discharge, and it was said that during this time he acted rather queerly. On December 5, 1895 (four days after the onset of his pain), he had a general convulsion lasting twenty minutes, with loss of consciousness, violent twitching and frothing at the mouth. Prior to this he had never had any convulsive seizures.

The patient was removed to the New York Eye and Ear Infirmary and was operated on first for mastoid trouble. Within forty-eight hours he developed an amnesic aphasia which was quite marked. On the ninth day after the operation he had a severe chill during the night, with profuse perspiration and severe headache. His symptoms at this time were very suggestive of sinus thrombosis. The skull was thereupon opened in the left temporal region and an ounce and a half of pus was evacuated from an abscess in the temporo-sphenoidal lobe. Shortly after the operation he had several convulsive attacks. His aphasia gradually improved, and on January 29, 1896, had entirely disappeared.

During the thirteen years that had elapsed since the operation, this patient had had 22 convulsive attacks. The last one, which occurred in April, 1906, as well as the one occurring two weeks prior to that time, was very mild. The attacks were gradually occurring at increasing intervals, and were apt to come on after severe fatigue. The patient had been taking bromides at irregular intervals since the operation.

Dr. E. Gruening, who was present and assisted Dr. Bacon at the operation, said he was particularly struck by the aphasia, as this was one of the first cases in which he had observed that symptom. The patient was able to describe objects that were shown him and he knew their use, but he could not name them. Since that time, Dr. Gruening said, he had successfully operated on five cases of temporo-sphenoidal abscess, and four of these he had been able to keep track of. In one of them, a child of five years, there were convulsive seizures accompanied by a leakage of cerebrospinal fluid from the ear. The child improved after spinal puncture. The

four cases that he had been able to follow had recovered completely and had no epileptic seizures.

Dr. E. B. Dench referred to a case of temporo-sphenoidal abscess upon which he had operated four years ago. That patient, who was now in Cuba, had had two epileptic seizures; both, it seems, occurred after violent exercise about a year after the operation. He had now been free from convulsions for over eighteen months.

Dr. Edward D. Fisher thought it rather unusual that this patient should have suffered from amnesic aphasia instead of auditory aphasia, which we would expect to find in such a case.

Dr. Gruening, in reply to Dr. Fisher, said that this was the usual form of aphasia that was met with in abscesses of the temporo-sphenoidal lobe on the left side. In fact, instead of being unusual, it was pathognomonic of abscess in this location.

Dr. William M. Leszynski said that several years ago he saw a patient in whom he made the diagnosis of otitic brain abscess. This patient had a number of epileptic attacks. While being prepared for operation she died suddenly from rupture of the abscess into the ventricles. At autopsy it was found that the abscess had involved the motor cortex as well as the temporo-sphenoidal lobe.

#### DISCUSSION ON OTITIC BRAIN ABSCESS ADEQUATE METHODS OF DRAINAGE, THE ESSENTIAL STEP IN THE SUCCESSFUL SURGERY OF OTITIC BRAIN ABSCESS

By Dr. F. Whiting, M.D.

The speaker said that to those practitioners of medicine who interested themselves in intracranial surgery, it had long been a source of mortification and disappointment that after a brilliant operation, resulting in the evacuation of an abscess of the brain which had been accurately located by painstaking and masterly diagnosis, the condition had none the less in a large percentage of cases resulted in a fatal termination. In the opinion of the writer, the post-operative treatment of brain abscess had never received at the hands of general surgeons and otologists the consideration to which the importance of the subject entitled it. There were many interesting and important considerations referable to the post-operative care of brain abscess cases, which the question of drainage naturally suggested. Three important details constituted the essential factors of successful abscess drainage: (1) Scrupulous care should be exercised in inducing complete evacuation of all pus and pyogenic material at the time of operation. (2) The establishment and maintenance of an uninterrupted communication, by means of gauze or other drains, between the deeper portions of the abscess cavity and the drainage opening, without adding unduly to the pressure upon the brain substance surrounding the walls of the abscess. (3) The avoidance not only at the time of operation but especially during the after-treatment of gratuitous infection of healthy surrounding brain tissue by misdirected efforts at the introduction of gauze or other drainage material attempted without the assistance of actual inspection of the abscess path.

Dr. Whiting said that with the hope of reducing, and, if possible,

eliminating from the post-operative treatment of brain abscess the danger of unnecessary traumatism, he several years ago devised an instrument which was called an encephaloscope. This appliance was designed to permit, with the aid of artificial illumination, the critical inspection of the interior of a brain abscess cavity in such a manner as to avoid all violence to the brain tissue. Moreover, by the employment of this instrument, the introduction and proper adjustment of gauze or other drains in the depth of the wound, both at the time of operation and during subsequent dressings, became an exceedingly simple and altogether safe procedure.

### OTITIC BRAIN ABSCESS FROM AN ANATOMIC AND CLINICAL POINT OF VIEW

By Alfred Wiener, M.D.

The author stated that the occurrence of brain abscess after purulent otitis media was a serious complication. Its localization, as well as its early recognition, was an urgent matter, but often a difficult task. Such abscesses followed both acute and chronic otitis media purulenta, especially the latter. According to Grunert, in 91 per cent. of the cases the abscess was due to a chronic suppuration of the middle ear. Hammerschlag, on the other hand, found only 75 per cent. due to that cause. In regard to their relative frequency, Jansen reported one brain abscess in 2,500 cases of acute, and six in 2,500 cases of chronic suppurative otitis media. It was a rather rare complication in early childhood, and the largest number occurred between the ages of ten and thirty years. They appeared to occur more frequently on the right side, according to Koerner and Koch. On the other hand, Okada Heimah and Neuman, whose statistics referred especially to cerebellar abscess, placed the percentage higher on the left side. In the large majority of cases, otitic brain abscess would be found to lie in close proximity to the primary suppuration in the petrous portion of the temporal bone, very often in direct communication with it. In the cerebellum it occupied most frequently the anterior portion of the lateral lobe. Extradural abscesses were found between the bone and the dura mater. As a rule, brain abscesses were solitary, and the contents of most abscesses was pus which might be of a fluid consistency or as thick as molasses.

Dr. Wiener then described in detail the clinical picture of otitic brain abscess, and, in closing his paper, he emphasized the following points:

1. In those cases in which it could be demonstrated that suppuration was still going on in the middle ear or contiguous parts, and one was reasonably sure that brain abscess complicated the condition, it was well to remember that in 57 per cent. of such cases the brain abscess and the suppurative condition in the ear were in direct communication.

2. There were cases in which the suppurative process in the ear was active, but the abscess was separated from the primary suppurative condition by normal brain tissue. This occurred in about 26 per cent. of the cases.

3. There were cases in which the suppurative condition in the ear had ceased, and there was every reason to believe that a brain abscess was present and to be accounted for by this previous suppuration. The abscess might lie in close proximity to the original trouble or at some distance



from it. In those cases no communication with the ear sinuses existed.

4. At times, otitic abscesses were latent, and might possess very thin walls. Furthermore, they might be situated dangerously near the ventricles or the arachnoid space. In operating on these cases, if the mastoid process was first attacked, the chiseling necessary might lead to rupture of the abscesses, with a rapidly fatal issue.

5. Such abscesses might exist in the latent stage for a long time, and become manifest after an ordinary trauma to the skull.

6. In all cases, Dr. Wiener said, it was his firm belief that even though the abscess might be suspected, we should deal most radically with the suppurative ear condition first, and then boldly attack the abscess.

Taking these anatomical and clinical facts into consideration in the treatment of otitic brain abscess, we should especially consider, first, the location of the abscess; second, its duration; third, its intimate connection with an existing suppurative process in the middle-ear cavity.

### THE COMMON AND UNCOMMON LOCALIZATION OF OTITIC BRAIN ABSCESS, AS ILLUSTRATED BY THE CASES, WITH RECOVERY

By B. Sachs, M.D., and A. A. Berg, M.D.

The authors stated that of all brain lesions calling for operative interference, brain abscess, and particularly otitic brain abscess, had proved to be the most promising. Abscess following upon otitic and mastoid disease was situated commonly in the temporo-sphenoidal lobe, or in the cerebellum. It was far less common in other parts of the brain. When situated in the temporo-sphenoidal lobe of the left side, there would be, in addition to the general symptoms (such as headache, somnolence, nausea, vomiting, slight optic neuritis) slight hemiparesis and the symptoms of impairment of speech perception. While the patient might be able to articulate and to use language spontaneously, the perception and interpretation of speech might be more or less defective. Sensory aphasia was no doubt a very common accompaniment of otitic brain abscess situated in the temporo-sphenoidal lobe, more particularly if such abscess was in the left half of the brain. It was a symptom which was not always apparent unless specially examined for.

If the abscess was located in the cerebellum, there would be, in addition to the general abscess symptoms, cerebellar ataxia, a diminution of the deep reflexes, possibly abducens paresis or palsy, acoustic nerve symptoms and perhaps cerebellar seizures. If the lesion was in some other part of the brain, the symptoms due to involvement of that special portion, providing it was not a silent part of the brain, would be present, in addition to the symptoms referred to above.

The authors then reported in detail two cases of otitic brain abscess. The points of special interest in the first case, from a neurological point of view, were that on account of the slight involvement of fibers coming down from the motor area, the subcortical location of the abscess was correctly surmised, while the rapid recovery from the speech defect and the disappearance of the motor paralytic symptoms in the extremities were astonishing. From a surgical standpoint, the case was of interest because it enabled one to open a discussion as to the best manner of approaching

and draining temporo-sphenoidal abscesses and cerebral abscesses in general. The neurological interest of the second case was limited largely to the question of the localization of the abscess. In this case, the parietic symptoms of the right upper and lower extremity were distinct enough, but there was an entire absence of speech disturbance, although the original disease had involved the left ear. In view of this absence of speech disturbance it was natural to infer that the abscess was not in the temporo-sphenoidal lobe, where it had been looked for previously, but in the motor area, and the successful finding of the abscess at the time of the operation proved that this reasoning was altogether correct. In this second case, as in the first, recovery was prompt and complete.

When the surgeon was asked to deal with an abscess of the brain that was accurately localized, his concern was entirely with the technical parts of the operation. His work was to approach the abscess by the most direct route, evacuate the pus, and establish satisfactory drainage of the cavity. It was evident that in any case there were three main considerations: (1) A wide exposure of the area of the brain in which the abscess was supposed to lie. (2) The protection of the meninges from infection by the purulent contents of the abscess cavity. (3) Proper drainage of the abscess cavity. In those abscesses with soft walls that readily collapsed when the contained pus was evacuated, all that was required was the establishment of drainage by a thin slip of rubber tissue at the most dependent point of the cavity. This should be removed after 48 hours, and not re-inserted. In abscesses with rigid walls that showed no tendency to fall together, and that must be obliterated by the slow process of granulation, the drainage must be by a tube of some kind, whether rubber or decalcified bone or other material, depending upon the choice of the operator.

Dr. Gorham Bacon said he was fully in accord with the plan of treatment outlined by Dr. Whiting, and he had little to add to what had been said. He was in favor of gauze drainage, and was opposed to washing out these abscess cavities. The possibility of injuring adjacent brain tissue should never be lost sight of in these operations, and to help avoid such an accident the encephaloscope had proved of value. The speaker agreed with Dr. Wiener that abscess in the temporo-sphenoidal lobe was more frequent than in the cerebellum, and he recalled one instance which was on record where he had found an abscess in both locations in the same patient. In the case he had shown earlier in the evening, Dr. Bacon said he had taken the risk of introducing his finger into the abscess cavity, he had not washed it out nor drained it, and still the patient got well, while many other cases seen since that time and treated by what were now regarded as more ideal methods failed to recover. Perhaps the constitution of the patient had much to do with the final outcome of the case.

The diagnosis of temporo-sphenoidal abscess was at times extremely difficult. Pain was the most constant symptom, and usually we obtained a history of chronic purulent otitis media.

Dr. Gruening said the symptom of optic aphasia in these cases had been known to otologists for a long time. Dr. Wiener stated that most of these abscesses were located near the diseased bone, but that in a small percentage of cases they were located at some distance from the bone and apparently separated from it by normal brain tissue. Personally, he did not believe that this intervening brain tissue, through which the infection had been carried by the lymphatics and vessels, was entirely healthy.

Dr. Gruening said he had had perhaps ten unsuccessful cases of otitic brain abscess, and five successful ones and these were consecutive cases. He attributed his success to the avoidance of stiff drainage tubes, such as rubber. For drainage material he preferred gauze, and he was opposed to irrigation. He had never found it necessary to use the encephaloscope, and was afraid that it might be the means of producing a false passage.

Dr. James F. McKernon said there were simply one or two minor points to which he would limit his remarks. He had found the optic aphasia a prominent symptom in all of his left-sided cases of otitic brain abscess. In regard to irrigation of the abscess cavity, he had had four cases recover where he irrigated the cavity with normal salt solution. They were not acute cases, the suppuration having apparently been going on for a long time, and upon exposing the cavity its thickened contents would not flow out. In one instance where he used the encephaloscope, a false passage was produced, due probably to his lack of experience with the instrument at that time; since then he had used it with excellent results.

In dealing with a brain abscess with thickened walls and containing a large amount of detritus, he saw no objection to the employment of a gentle, warm irrigation. It was certainly less harmful than curetting. The speaker said that in addition to the four successful cases of the chronic type in which he had irrigated, he had also resorted to it in two cases of acute onset, one following the radical Stacke operation and the other after the opening of the mastoid and sinus. He had now given up irrigation in the acute cases, and simply mopped out the cavity with a bit of sterile gauze, but he would still continue to irrigate in chronic brain abscess with thickened membrane or limiting walls, which failed to collapse upon exposure, and where packing was necessary in order to produce healing. In two acute cases the speaker said he had employed rubber tissue drainage with good results. He used for that purpose rubber tissue about the size of a few strands of catgut, which were removed at the end of 72 or 100 hours and were then left out twisted together.

In discussing the value of blood examination in the diagnosis of brain abscess, Dr. McKernon said that in one case of suspected abscess of the chronic variety the differential blood count gave little or no information. Because there was but little absorption taking place, the leucocytosis was about 12,000, with a polymorphonuclear percentage of 45. Upon operation he found an abscess at the posterior tip of the temporo-sphenoidal lobe, and evacuated about two ounces of pus. In another case the polymorphonuclears were 94 per cent. and the leucocyte count 34,000, which confirmed the diagnosis. The blood count was a valuable measure in differentiating between the acute and chronic types of abscess. The speaker said that he had discarded the use of the rubber tube a number of years ago as a means of drainage, and now used either iodoform or plain gauze rolled up in the shape of a pencil.

Dr. E. B. Dench said he had operated on eighteen cases of otitic brain abscess, twelve of the temporo-sphenoidal type, and six of the cerebellar. Of the former, six had died, five had recovered and one was still under treatment. Of the cerebellar cases, five had died and one recovered. Among his acute cases, some had shown an increase in the polymorphonuclears to above 80 per cent., yet even in that type of cases that was not the invariable rule. In the chronic cases, the polymorphonuclear percentage was not usually very high.

Dr. Dench said he agreed with what Dr. Gruening had said in regard to the encephaloscope. He could not appreciate how the educated finger could do as much harm as the uneducated encephaloscope. Ballance, in his operative work, used the finger regularly to gain access to the abscess cavity. Personally, Dr. Dench said, he employed two rather long retractors by which the brain substance was elevated, and this gave a very good view of the interior of the abscess cavity—better, he thought, than the encephaloscope—and there was less danger of traumatism.

In dealing with chronic abscesses, he did not think it made much difference what method of drainage was employed. In some of his cases, both acute and chronic, he had found it necessary to employ different methods of drainage. In some cases, rubber tubes were employed, and in one case, in particular, where a gauze drain had been used, the case did badly until rubber tubes were substituted, when the patient made a perfect recovery. In most of the acute cases he preferred either the cigarette drain, composed of gauze surrounded with rubber tissue, or a simple drain of rubber tissue. The drain made of this last-named substance, was easily inserted, and was removed without difficulty. It had always seemed to the speaker that rubber tissue, on account of its easy removal, inflicted less traumatism upon the delicate granulation which was thrown out in the abscess cavity and along the fistulous tract leading to it, than did the sterile gauze. The speaker said he would not hesitate to irrigate a chronic brain abscess, with thickened walls, although this was not his invariable rule. At a meeting of the Otological Section of the American Medical Association, in Boston, Mr. Ballance had called the speaker's attention to the fact that cerebellar abscesses, of otitic origin, were twice as common as those occurring in the temporo-sphenoidal lobe. These statistics were derived from a large number of cases of brain abscess discovered at autopsy, and in looking over the various statistics of large hospitals, the speaker had found this to be an actual fact, namely, that cerebellar abscesses were about twice as frequent as abscesses of the temporo-sphenoidal lobe. Clinically, however, his own statistics showed that temporo-sphenoidal abscess was about twice as common as cerebellar. The speaker said that whenever the avenue of infection could be traced directly from the tympanic or mastoid cavity, the abscess should be opened along the avenue of infection. In this way, the subdural space would not be opened, for the membranes would be found to be thoroughly amalgamated as the result of the previous inflammatory process, and consequently, the danger of subsequent meningitis and hernia cerebri would be reduced to a minimum. In cases in which the path of infection could not be followed directly, and in which it was necessary to perform a purely exploratory operation, it would then be wise to enter the cranial cavity above the zygoma. In this way, the exploration of the brain would be carried on through a perfectly sterile field, and if no abscess were found, the danger of infection would be very slight. If, on the other hand, the exploration were carried on through the tegmen tympani and tegmen antri, the brain would be approached through an infected field, and death might occur as the direct result of the operation.

In these exploratory operations, the speaker was inclined to advocate the plan suggested to him by Mr. Ballance, viz., of doing the operation in two stages: The first stage would consist in exposing and incising the dura and packing off the subdural space with iodoform gauze, so as to cause the formation of adhesions and the obliteration of the subdural space.

Subsequently, the brain substance could be incised, and any purulent collection evacuated, without the danger of a subsequent meningitis. The speaker would therefore advocate doing a decompression operation above the zygoma in cases of temporo-sphenoidal abscess, or behind the lateral sinus in case of cerebellar abscess, incising the dura and packing off the subdural space with iodoform gauze for a period of from 12 to 24 hours. Subsequently, the cerebral or cerebellar substance could be explored for pus. In the meantime, the subdural space would be completely walled off by adhesions, and if an abscess were evacuated, the dangers of subsequent meningitis would be avoided.

Dr. W. Sohler Bryant said the spread of infection from the ear to the brain was accomplished in four ways: (a) Through the tegmen tympani into the middle fossæ. (b) Through the internal auditory meatus and aqueducts into the posterior fossæ. (c) Through the inner table covering the sigmoid groove covering the sinus into the posterior fossa. (d) The infection in one fossa may spread into the next. All varieties of brain abscesses were of infectious origin. They occurred in all gradations, from an encapsulated abscess with a distinct pyogenic membrane and a minute connection with the original source of infection, to the other extreme—a diffuse softening, a mere enlargement of the original infection.

After discussing in detail the diagnosis of otitic brain abscess, Dr. Bryant said the diagnosis was positive when focal brain symptoms occurred with a peripheral infection. A blood count was useful to determine the presence of active infection and the resistance offered to it by the patient, but it was of no value in locating the infection. Treatment was operative, and of two kinds: (1) Peripheral exploratory operations to confirm the diagnosis and to locate the abscess. (2) Central operation for evacuation and drainage after the abscess had been located. It was best to follow the path of infection in planning the location of drainage. An operation should be undertaken the moment the diagnosis was made. An exploratory operation for brain abscess should be done as soon as indications of mastoiditis, sinus thrombosis or meningitis were present. In reply to the question when should we operate for mastoiditis, the speaker said that this should be done at the earliest possible moment when the aural inflammation appeared to be beyond our control. The after-treatment of brain abscess should be directed to rigid asepsis to prevent reinfection or extension of infection, preservation of drainage and slow closure of the wound. The patient must be kept quiet for a long time after complete healing, and must be kept under observation for a year or more for fear of recurrence. Urotropin, in doses ranging up to 60 grains daily, by mouth, was an aid to intracranial antisepsis.

Dr. Bryant said that during the past two years he had had eight cases of brain abscess, three cerebral and five of the cerebral and cerebellar type combined, with 50 per cent. of recoveries after operation. All the cases which were fatal were treated under special disadvantages, either from complications, lack of opsonic resistance or delayed operation.

Dr. Joseph Fraenkel said that to the neurologist these cases of otitic brain abscess were comparatively rare. Personally, he had seen perhaps four or five, and he would limit himself to a discussion of the optic aphasia to which several of the speakers had referred. Marie had recently shaken our old-time conception of aphasia, and to-night, the speaker said, he had received another shock along that line. What the otologists had

described as optic aphasia was better known to neurologists as anomia, which was the loss of power to give objects their correct names. This did not, in his opinion, constitute an optic aphasia. In a case of this kind that was under the observation of Dr. Charles L. Dana and himself, the autopsy showed a minute lesion in the temporo-sphenoidal lobe. A true optic aphasia would point to a lesion in the optic lobe or commissure.

In closing, Dr. Fraenkel emphasized the fact that the surgical finger could not be too highly educated in searching for a lesion in such a delicate structure as the brain.

Dr. J. Ramsay Hunt said the more he saw of otitic brain abscess, the more pessimistic he became regarding the difficulties that surrounded not only its diagnosis, but its treatment. During the past eight years he had seen fifteen cases; all of them were operated on and all of them died. The operations were done in various hospitals throughout the city, and these unfavorable statistics could not be laid at the door of any one surgeon or group of surgeons. All were cases of cerebral abscess and not extradural; of the latter, he had seen several get well.

As an instance of the diagnostic difficulties sometimes encountered, Dr. Hunt recorded a case of acute otitis media on the left side of three weeks duration in which there had been no focal symptoms of brain abscess and no general symptoms save unilateral headaches which accompany so frequently acute suppurative conditions of the ear.

A mastoid operation was immediately performed; a portion of the dura was found broken down and covered with granulations and this on exploration led into a large temporo-sphenoidal abscess, which had given rise to no speech or paralytic disturbances, and no optic neuritis. The patient was right handed.

Dr. Hunt also referred to a puzzling group of cases, with general symptoms of profound intoxication, including headaches, stupor, and delirium, in which focal symptoms are present suggesting a cerebellar localization; nystagmus, disturbances of gait and equilibrium, nausea and vomiting, even a low grade neuritis may be present. Cases of this group he had seen operated upon without demonstration of an abscess in the cerebellum, and he was inclined to regard the focal symptoms as of purely aural origin which with the profound general intoxication simulated closely cerebellar abscess. Optic neuritis may not be relied on absolutely as it may complicate acute otitis media.

Dr. Fisher said that in dealing with otitic brain abscess or even suspected abscess, he was in favor of an early exploratory operation, preferably by a surgeon specially qualified in that field.

Dr. William M. Leszynsky said that during ten years' experience as consulting neurologist to the Manhattan Eye and Ear Hospital he saw quite a number of these cases, which he thought were less frequent now than formerly. He was inclined to believe that the otologist, as a rule, had a sort of euphonious disregard for the opinion of the neurologist in general, that he could get along without him in dealing with these cases, and that all that was necessary was an exploratory operation. The speaker said that the experienced neurologist could often be of much assistance to the otologist during the earlier stages of otitic brain abscess, before the symptoms had become so unmistakable that any tyro could make the diagnosis. He recalled one case, seen several times in consultation, in which the otologist could not be convinced that a cerebellar abscess was present until it was shown to him at the autopsy.

Dr. Leszynsky said that no mention had been made of one of the dangers attached to cerebellar abscess. Cases were on record when at the moment such an abscess was punctured, death occurred suddenly from respiratory paralysis. Such an instance had occurred under his observation. In view of that fact, it seemed logical to infer that in cases of brain abscess attended by sudden death from respiratory failure the lesion was located in the cerebellum rather than in the temporo-sphenoidal lobe.

In reply to Dr. Gruening, the speaker said that neurologists had long been familiar with this type of aphasia, which was of value in the recognition of otitic temporo-sphenoidal abscess when it was present. Most of the abscesses however did not occur on the left side, and it was invariably absent when the abscess occurred on the right side, unless the patient was left-handed.

Dr. Felix Cohn said that in obscure cases of otitic brain abscess, a blood count should never be neglected, as it might aid in differentiating the condition from various forms of meningitis. The speaker reported a case of cerebellar abscess in which the condition of the increased reflexes led to the correct diagnosis.

Dr. Whiting, in closing, speaking of the encephaloscope, said it was simply a question of using the instrument with which you were familiar. A workman must understand the use of the tools in his hands. Personally, he had had no difficulty in introducing it into the cavity of a brain abscess, and he knew of many others who were adept in its use. It was an instrument which with a very moderate amount of practice gave a remarkably clear view of the abscess cavity, and could be used with great precision.

Dr. Berg, in closing, said he was inclined to agree with those who preferred rubber tissue to gauze in the drainage of an acute brain abscess, but for drainage of a chronic thick-walled abscess, some form of tube drain must be used; for when gauze became saturated it no longer acted as a drain but as a tampon blocking up the pus in the cavity. In cases where drainage was really demanded, we could not rely on gauze; we had to resort to a tube of some material.

The President, Dr. Sachs, said that a common error made by surgeons and otologists was that they were inclined to attempt a brain operation through relatively small openings. If there was one factor that would lead to better results in brain surgery it was to do the operations through a large osteoplastic flap.

Dr. Sachs said the symptom of sensory aphasia had not been as carefully observed or reported as it deserved, and it was easily overlooked. The exact type of the sensory aphasia in these cases depended on the location of the abscess.

## THE PHILADELPHIA NEUROLOGICAL SOCIETY

November 27, 1908

The President, DR. J. W. McCONNELL, in the Chair

## EXOPHTHALMOS ASSOCIATED WITH FACIAL PALSY

By William G. Spiller, M.D.

The history given by the mother of the patient is as follows: G. had a convulsion at the age of three and a half years, and had about five convulsions until she was six years old. The child was healthy at birth and the labor was not difficult nor prolonged. Instruments were not employed. Two children older than the patient are dead, one died from cholera infantum, the other from diphtheria. The patient now 14 years old, had no illness before or at the time the convulsions began. The facial palsy and unilateral exophthalmos were first noticed when the child was about five years old. The condition seems to have developed gradually and to have remained unchanged until the present time. There has never been any ear disease. A photograph of the child when she was about two years old represents a normal condition of the face.

The limbs are strong and tactile and pain sensations are normal everywhere. She has not had headache, vertigo, nausea or vomiting. She has complete left facial palsy peripheral in type, *i. e.*, very slight contraction of the orbicularis palpebrarum and no power of contraction in the lower part of the face. The left palpebral fissure is decidedly wider than the right. The faradic current gives prompt response in the muscles on the left side about the mouth and in the chin, but no response in the remaining portion of the facial nerve supply in any strength that can be employed. The electrical irritation of the muscles about the mouth produces a fine tremor in these muscles which persists some minutes after the electrode has been removed. The galvanic current could not be employed at the time of the examination as the machine was not in order.

The left eyeball protrudes somewhat in advance of the right. The pupils are equal. The child stammers, otherwise nothing abnormal is observed in the speech.

The report from Dr. Posey's clinic is as follows: "November 12, 1908. Vision 5/5 in the right eye, and 5/7.5 in the left eye. Left eye is more prominent than its fellow, left palpebral fissure being 3 mm. the wider. Gross ocular movements are good in both eyes and pupils react promptly to light and accommodation stimuli. Neither fundus shows any indication of systemic trouble, and fields of both eyes are normal. There is some refractive error."

Dr. Spiller regarded the exophthalmos as of moderate intensity,<sup>1</sup> and more than could be explained by paralysis of the orbicularis palpebrarum muscle. It had developed with the facial palsy at an early age and during

<sup>1</sup>Dr. de Schweinitz kindly measured the exophthalmos February 1, 1909, with Hertel's exophthalmometer. The right eye measured 15 mm., the left 18 mm. Vision of right eye was 6/6; of left eye 6/9.



or following a period of convulsions. It was uncertain whether the symptom-complex could be attributed to sinus thrombosis as some other cranial lesions might have been the cause. In the literature he had consulted, exophthalmos is not mentioned as a sign of facial palsy.

Dr. Charles K. Mills thought we should hesitate to make the symptom-complex, which is very interesting and new, dependent upon a single lesion.

Dr. Alfred Gordon said he wished to venture an idea which occurred to him. From the studies on exophthalmic goitre, and its pathogenesis, we know there are a number of cases with lesions in the medulla, for example little hemorrhages, cases which during life presented the picture of exophthalmic goitre, unilateral or bilateral. Assuming the patient had a nuclear lesion of the seventh nerve, and that there was a little hemorrhage in that neighborhood, perhaps this condition of exophthalmos may be explained.

Dr. F. N. Dercum said that the appearance of the case suggested a possible former thrombosis of the cavernous sinus which may have extended sufficiently far back to involve also the petrosal and lateral sinuses; one would expect to find some involvement of the ocular-motor, abducens or pathetic nerve persisting. It is possible, of course for these nerves to recover after a sinus thrombosis but in such case the question arises why should the exophthalmos persist.

#### FACIAL SPASM TREATED BY ALCOHOL INJECTION

By William G. Spiller, M.D. and Charles H. Frazier, M.D.

A patient was exhibited who had been cured of facial spasm by injection of alcohol. Dr. Frazier had cut down upon and exposed the facial nerve on May 29, 1908, and then injected a small amount of alcohol. Complete facial palsy immediately developed, and lasted until the middle of August, about three months. Voluntary movement gradually returned in the facial distribution, and at the time of presentation, about six months after the operation, no return of the spasm had occurred, although the facial palsy had disappeared. Even during the complete palsy of the face the patient had found his condition more endurable than the spasm.

#### CEREBELLAR SYNDROME SHOWING PROGRESSIVE IMPROVEMENT AFTER A DECOMPRESSIVE OPERATION

By Alfred Gordon, M.D.

Man of 41 sustained a blow over right parietal region about 14 years ago. Since then he would feel a soreness in the same area occasionally. About eighteen months ago severe pain developed and a diagnosis was made of right supraorbital neuralgia for which operation was done (extirpation of nerve). Pain returned. Six months ago he began to suffer from severe pain in the occipital region and from vomiting spells. Four months ago a dimness of vision with diplopia appeared which kept on increasing. He came under Dr. Gordon's observation September fourth and had an unsteady gait with an occasional tendency to walk to the right;

the power of the limbs normal; the right knee jerk much diminished and the left increased; no Babinski on either side, but paradoxical reflex was present on the right. The eye examination showed marked choked disc in the right and less marked in the left eye. veins enlarged, small hemorrhages. Vision was 15/70 for the right and 15/30 for the left. Both internal recti paretic. Nystagmus was present on the right. In view of increasing loss of vision an operation was advised. Accordingly on September 14 a portion of the occipital bone was removed on both sides at the lowest level of the occiput and the bridge between them was also removed. Some cerebrospinal fluid escaped on the right but none on the left.

Three years after the examination the eyes were examined. The diplopia was diminished and the external recti functionated better. The discs were much better defined and the papillæ diminished. The nystagmus was gone. The patient kept on improving, the headache and vomiting disappeared totally and eyesight improved daily. The gait became better. The knee jerks became normal and equal.

On October 3 the vision of O.D. was 15/40 and of O.S. remained 15/30. Diplopia disappeared. Edema of the papillæ had largely disappeared. On October 28 condition still more improved. From November 9 to the present, condition of the eyes remained unchanged. He noticed, however, a new phenomenon: Whenever he turns his head to the left he is taken with vertigo, nausea and mental confusion. Should he happen to fall asleep on the left he gets awake with a sense of nausea. He is therefore compelled to look and walk to the right.

At present the knee jerks have changed again. The right is diminished and the paradoxical sign has reappeared on the right. The external recti show again a slight weakness and there is a slight nystagmus when the eyes are turned to the right.

Dr. Mills read a paper with the title: Tumor of the Frontal Subcortex and Callosum, with Flaccid Paralysis of the Muscles which Support the Head, Aphonia, Mental Change, and other Symptoms, Illustrated by a Case with Necropsy. (To be published in this Journal.)

Dr. Gordon asked whether Dr. Mills considered anatomically a lesion of the corpus callosum can be regarded as corresponding to the symptom complex Dr. Mills described.

Dr. Mills said he would like Dr. Donaldson to say something in regard to the callosum as he has had some experience with experiments on this structure in the lower animals. We know that connection is made between the two hemispheres by callosal fibers. It is not improbable that such connection is made in those cases in which a single center in one hemisphere is sufficient for the control of both sides of the body, as for movements concerned in maintaining the erect position of the head and other well known movements.

Dr. Donaldson said he did not think the experiments he had in mind, on the recovery from lesions of the callosum in growing animals and the degenerations due to lesions made in mature animals, bore on the question.

The only thing that occurred to him in this connection was the fact that we do have recorded instances of lesion of the callosum without any symptoms whatsoever, and these cases would have to be taken into account in considering the suggestions made.

THE DURATION OF LIFE AFTER EXTENSIVE HEMORRHAGE OF THE BRAIN<sup>1</sup>

By William G. Spiller, M.D.

Dr. Spiller said his experience had not justified a diagnosis of apoplexy in cases in which life has been terminated within fifteen to twenty minutes. He had taken thirteen specimens from the collection of pathologic conditions, in which extensive hemorrhage of the brain was found at necropsy. Many of these were from cases in his service at different hospitals; others were from cases in the service of Dr. Mills. In all instances life had been prolonged at least hours after the onset of the apoplexy, even when the hemorrhage was very extensive, had broken into the ventricles, and filled all the ventricles, even the fourth. In two cases of this kind life was prolonged several hours; in one about five hours, in the other eighteen to twenty hours.

Dr. S. D. Ingham said he had seen one case which had some bearing on this subject. A woman, perhaps 60 years of age, who had previously been in ordinary health, was suddenly stricken while alone in her kitchen. She was not seen within a few minutes of the time she became unconscious, but she had not been alone more than half an hour. She was found in a kneeling position as if she had fallen doing some of her household work. Dr. Ingham arrived at the house perhaps half an hour after she was found, during which time she had shown no sign of life. At that time she was cyanotic and getting cold and had undoubtedly been dead for sometime. At the autopsy which was performed the same day, the left ventricle was found entirely filled with blood clot. There was no other organic disease noted at the autopsy. The duration of life from the onset of the attack could not have been more than one hour and was probably considerably less. The left ventricle was entirely filled, the hemorrhage also extending into the other ventricles to a less degree.

Dr. S. Leopold read a paper on Sacral Tabes. (See this JOURNAL, p. 193.)

## CHICAGO NEUROLOGICAL SOCIETY

November 19, 1908

DR. A. C. CROFTAN, in the Chair

## FOUR CASES SHOWING SOME OF THE CARDINAL SYMPTOMS OF MULTIPLE SCLEROSIS

By R. C. Hamill, M.D.

Dr. Hamill said in a preliminary way: he had some cases in which either diagnosis is not sure or the symptoms are unusual. All four patients are inmates of the Cook County Infirmary, at Dunning.

The first patient, T. D., 24 years old. Family history: Father died of tuberculosis; one brother, now 23 years old, has headaches with vomiting, possibly migraine.

<sup>1</sup>The paper has been published in the Journal of the Amer. Med. Assoc., December 19, 1908.

The patient's mother told him that she was sick during practically the entire time of gestation and that he would never be well on that account. He had no sickness until sixteen years of age, when he had rheumatism in both knees; no venereal disease; moderate drinker and smokes much.

The onset of his present trouble, particularly interesting because of its acuteness, was two years ago. While at work, about eleven o'clock in the morning, his head began aching unbearably; there was diplopia, vomiting and dizziness, he had to go to bed. The next morning on getting up his legs were very weak; was taken to the Swedish Hospital; had diplopia; upon attempting to drink water his hand would shake so as to spill the water, turning the head to either side caused nausea; had to be catheterized once and required an injection to make his bowels move; improved in the hospital sufficiently to be able to walk; returned home; his doctor gave him some medicine "to kill or cure"; in a few months he went to the County Hospital "all swelled up with water." He now complains of stiffness and weakness and ready fatigue, especially of the legs. When he walks there is almost constant dizziness; some swaying of the body, considerably increased upon closing the eyes; the feet are put down much after the manner of a tabetic. The man is twenty-four years old; he has some difficulty in articulation; his voice is soft and monotonous; there is a tremor in the left upper lip and of the entire lower lip when talking. The uvula hangs toward the right; the right faucial arch stands higher and acts quicker than the left. The grip is noticeably stronger in the left than in the right hand; he can rise from a reclining to a sitting position without lifting his heels from the bed. In the knee-heel test there is overaction, jerkiness, and after the heel settles on the knee there is some coarse swaying movements of the leg. In bringing his finger to the tip of the nose there are slight swaying movements of the entire arm. The wrist-taps are brisk; the right triceps brisk, left not demonstrable; the knee-jerks are increased; slight indication of an ankle clonus. The abdominal reflexes are bilaterally increased, this has been true on several different days. The right plantar is increased, left normal; no Babinski, Gordon or Oppenheim reflexes.

Nystagmus is present which is both static and dynamic though much increased by any movements. The center of the left disc shows a patch of whitening, shading to the normal color on the temporal side. Pupils normal.

With the cardinal symptoms of nystagmus, increased reflexes and slight intention tremor, the diagnosis of multiple sclerosis seems justified.

The only sensory changes demonstrable are a shortening, by ten to fifteen seconds, of the duration of the vibratory sense and increase from two to three times the normal of the Weber's circles. No disturbance of joint and tendon sense.

CASE 2.—J. H., fifty-eight years of age. Negative family history. He had yellow fever in 1875, malaria in 1876—no venereal history. Has been a sailor and a clerk.

Fifteen years ago a weakness appeared in the legs. This and the ready fatigue on walking have gradually increased. As long as he can remember he has had to get up at night to urinate. Though he says there have been no other bladder symptoms, at present there is some slowness in starting micturition and considerable dribbling following. About ten years ago he had an attack in which he could not speak nor swallow.

He was nourished per rectum for two weeks. Says he was not taking medicine at that time and that he was told he had pharyngitis. About that same time he developed trouble with hearing, could not hear a telephone bell at ten yards, also trembling, which for a long time showed only when, as he walked with a cane, he would put some weight on the hand holding the cane, which would then sway back and forth. At present the patient complains of rapid fatiguing, weakness in the legs, and some slight deafness. In walking the patient scrapes his feet, throws them forward with a jerk, stamps them slightly and sways quite noticeably. The right side of the mouth is higher and acts better than the left; the tongue protrudes practically in the mid-line with very slight deviation toward the right. In touching his nose with his finger there are one or two coarse jerks just before completing the act. The knee-heel test shows over-action, slowness and swaying for a few moments after the heel is placed on the knee. All tendon reflexes increased. Abdominal reflexes quite active; plantars normal. Duration of vibration sense ten to fifteen seconds shortened. The eyes are rather prominent; as they move rapidly from one side to the other one sees fine, rapid jerking in the movement. Pupils normal. The Weber's circles are increased five or six times the normal. The speech is explosive, very slurring but without much scanning. There is no disturbance of joint and tendon sense.

In him Dr. Hamill considered arterial sclerosis, possibly syphilis and multiple sclerosis. Cardinal symptoms of nystagmus, to be sure not very well marked, intention tremor, and increased reflexes suggest multiple sclerosis. The slow, gradual progress, the speech disturbance and the gait all speak for multiple sclerosis.

CASE 3.—W. B., forty-two years old, with negative family history. He had a chancre twelve years ago without secondary symptoms. He was a type-setter until 1892 and, although careless, never had symptoms of lead poisoning, no colic, paralyses, anemia or nephritis. About six years ago he had pneumonia. After the convalescence was well advanced he became delirious. Later he had a relapse in which speech was temporarily lost. Following this, he had much difficulty in walking; he tired rapidly, his gait was sufficiently uncertain to make him afraid to go about in the city. The trouble with walking and talking improved, or increased, at different times. At one time he could be pricked with a pin on the calf of the right leg without feeling pain. For the past year he has had difficulty in controlling the bowels if he had diarrhea. About two years ago had occasional attacks of diplopia. About a year ago he had a sensation as of a veil before his eyes; there is some headache and dizziness but no vomiting. At present he complains of rapid fatiguing and stiffness and weakness in the legs.

He does simple multiplication readily, tells a connected story, has no mental manifestations other than some difficulty in dating occurrences in the recent or remote past.

All movements are well executed except when he attempts to pick up small objects when there is noticeable a coarse swaying of the arms and a clumsiness of movements of the thumb and fingers. In his speech there is considerable slurring, slight scanning and an explosive quality.

In walking the feet seem to stick to the ground; they are jerked forward with some swaying and stamping. There are nystagmoid twichings in the lateral positions. The fundi are negative. The pupils are equal and react to light and accommodation. The wrist- and elbow-taps

are present; knee-jerks exaggerated; no foot clonus; both abdominal reflexes present; plantars increased. Inasmuch as he had a history of a specific sore, a spinal puncture was made. The intraspinal pressure was a little increased. The fluid was negative to neutral ammonium sulphate and there were no cellular elements. The vibration sense is shortened and Weber's circles increased. There is no disturbance in joint or muscle sense, the latter being tested with weights.

Here also are the cardinal symptoms of nystagmus and increased reflexes. There is a swaying uncertainty of movement in the knee-heel test and in picking up small objects. The spinal puncture, speaks strongly against syphilis.

CASE 4.—C. C., sixty years of age. Nothing in the family history. Previous history. He had an attack of diarrhea with passage of blood for about ten days ten years ago. A year later it was necessary to pass bougies for stricture of the rectum. Seven years ago he had gonorrhea followed by a sore throat, no eruption. He always did heavy labor. About three years ago he noticed a weakness in the thighs and back, followed by pain, sharp and shooting in character, and felt as though there were needles and pins in the soles; also girdle sensation. During the past year saw double on two occasions. There has been no nausea nor vomiting. About nine months ago had a breaking out on the left thigh answering the description of herpes.

At present there is pain in the back and the legs, a feeling of dizziness and worry, rapid fatiguing and frequent urination. There is considerable difficulty in repeating test sentences, patient not seeming to be able to remember a number of words given to him at once; he has had no schooling and cannot do simple multiplication. However, he says that fifteen days at \$1.50 per day is \$23.50; then he figured it out for a while and finally concluded it was \$22.50.

His conversation is for the most part quite connected, shows no indication of paresis.

There is constant movement of the right arm which is increased upon calling his attention to it as well as when he makes voluntary movements. These movements are due to clonic contractions, 2 to 3 per minute, of the scapular muscles, less of the biceps, and almost not at all of the forearm. (Tests were made showing considerable difficulty in touching the nose; also showing a rotary movement of the head; also showing a marked Romberg.)

His active movements are jerky and not as strong as his muscle-mass would warrant. There is no paralysis. His gait is spastic and he drags the left foot slightly. The left triceps is increased, both knee-jerks exaggerated, no abdominal reflexes, plantars normal. There are disturbances of pain and touch sense but they are so uncertain as to preclude the mapping out of definite areas. Weber's circles are greatly increased to five or six times the normal. Vibration sense is shortened. There are slight nystagmoid movements in the lateral positions. Fundi and pupils normal. Spinal puncture was made showing an enormous increase of pressure. No globulin or cellular elements. No disturbance of joint or muscle sense.

The cardinal symptoms are present, suggesting multiple sclerosis. Movements of the face, not like those of the mask, and the lack of characteristic pose speak against Parkinson's disease. There is no history of apoplectic attacks. All things considered, the case seems to be late developing multiple sclerosis.

SUMMARY OF CASE OF PERIPHERAL AND INTRACRANIAL  
NEUROFIBROMATOSIS (FIBROMA MOLLUSCUM,  
VON RECKLINGHAUSEN'S DISEASE)

By William Healy, M.D.

Girl, aged 18, candy-maker, family history and previous history negative. Four years ago first symptoms began with ringing in the ears and progressive deafness. Both ears early involved. Tonsils and adenoids operated on without relief. Three years ago again a sufferer from headache, frontal and occipital, occasional vomiting, vertigo and progressive difficulty in walking, diplopia. No fits nor convulsions of any kind. Symptoms stationary for a time, then betterment. Nine months ago worse again. Recently headaches much less severe, and vomiting very infrequent. Gait gradually becoming worse. Recently has noticed trouble with swallowing. Vision first impaired last January.

Examination: General condition good. Mentally normal in every way and indeed unusually bright considering difficulty with the special senses. Heart sounds normal but always very rapid. About ten superficial subcutaneous tumors varying from size of pea to walnut. These are well defined circular growths attached to the skin, non-inflammatory, easily depressed to or near the level of the skin, soft and some of them distinctly tender when deeply pressed. Cranial nerves: smell normal, vision left eye only fingers at six feet but sometimes quite blind in this eye. Reads with right eye. Peripheral vision difficult to test but quite sufficient even in right eye. Discs show high grade of neuritis with beginning atrophy; swelling about 4 diopters. Both pupils normal in appearance and react correctly. No ptosis; no nystagmus in straight ahead vision. Cornea insensitive on both sides. Sensibility of skin over face normal. Abducens paralysis complete left side, little better right side. Paresis facial muscle, worse left than right. No reaction of degeneration but diminution of response in muscle right side. Completely deaf both sides to aerial and bone conduction. Palate and pharynx insensitive. No pharyngeal reflex, nasal voice, palate lifted equally on both sides, but not to normal degree. Swallowing sometimes difficult, occasional regurgitation of liquids through nose. Tachycardia persistent, always over 90 and gradually increasing while in hospital. Tongue freely moved and with normal force. Motor: fine movements of hands somewhat defective; legs rather weak, slight spasticity in left leg. Gait: typical cerebellar but without evidence of falling or walking either to right or left. Sphincters normal. Coördination good in upper extremities. Cerebellar type in legs; extreme swaying standing either with eyes open or shut. Tremor: coarse in outstretched hands. Sensation: normal in all modalities. Sense of position and stereognostic sense normal. Reflexes: arm-jerks rather lively. No carpo-metacarpal. Knee-jerks and Achilles jerks both much increased, left more so; no ankle clonus; Babinski both sides, right greater; Oppenheim both sides; Gordon left side; abdominal all absent; urine normal.

Progress in hospital: remained four weeks; antiluetic treatment most of the time without benefit. Tachycardia increasing. When left hospital intelligent and still fairly cheerful.

Many cases of neurofibromatosis have been published and the literature has been industriously worked over, particularly by Adrian and Henneberg

and Koch, but only about half a dozen instances have been recorded where the tumors occurred both peripherally and intracranially. When they occur inside the cranium the place of selection is the cerebellopontile angle, but they may occur on practically all the cranial nerves, the roots of the spinal nerves and even in the medullary substance itself. They are quite apt to develop on both sides at the same time, although peripheral symmetry is not an especial feature. There may be gradual progression or rapid progression and then betterment for even a number of years. Some authors believe the tumors develop into sarcomata at the time of this rapid growth. We must agree with Bruns who says that it is safe to assume that intracranial symptoms of compression are caused by a neurofibroma if one finds such tumors in the periphery, especially if the symptoms point to the cerebello-pontile angle.

Dr. Carl Wagner stated that the case later came under his observation and from the clinical findings and X-ray work a tumor was diagnosed in the region of the cerebellum. He operated, making a Cushing cross-bow incision which exposed both cerebellar hemispheres. The part of the bone which covered the occipital sinus was left to the last. Although an even exposure of both sides was made, the left cerebellar hemisphere bulged three quarters of an inch beyond the level of the right one. By raising the left hemisphere a dark gray, firm tumor mass was seen in the cerebello-pontile angle at a depth of 5 cm. As the patient was in bad condition no attempt at removal was made. The patient did not rally from the shock. No autopsy was held.

## THE NEW YORK PSYCHIATRICAL SOCIETY

November 4, 1908

The President, DR. AUGUST HOCH, in the Chair

### A STUDY OF THE MENTAL MAKE-UP IN THE FUNCTIONAL PSYCHOSES

By Dr. August Hoch, M.D.

The results were based upon work done by Dr. Hoch and Dr. Amsden of Bloomingdale Hospital. It was shown that by careful inquiries there are found in most cases of dementia præcox peculiarities in the mental make-up of the patients before the psychosis develops. These peculiarities are present many years before the onset of the psychosis, and it would be just as much forcing facts to regard them as premonitory symptoms of the disease as it would be to regard any pre-disposition as such. In a large percentage of the cases of dementia præcox he found what he termed the "shut-in" personality, the characteristics of which were detailed and illustrative cases were given. In material collected some years ago and in which these features had not been looked for specially, this shut-in personality was clearly mentioned in 35 per cent. of the cases, and in 16 additional percentage of the cases clear indications of it were found in the histories. This shut-in make-up is not the only type of personality in which dementia præcox might develop, but it is the most frequent and up to the present the most clearly circum-



scribed. As a control material a large number of cases of manic-depressive insanity and of melancholia were studied, and the results plainly showed that these psychoses develop in entirely different kinds of personalities; the typical shut-in personality was not once found in them, but these cases presented either what might be termed a "manic personality," or "a depressive personality." It is of interest to note that the former occurred chiefly in persons who had only manic attacks; it was found next often in those who had both manic and depressive attacks, and very rarely in those who only had depressions. The depressive personality occurred chiefly in patients who only presented depressions, never in persons who presented manias only, but it occurred also in a small proportion of cases with both manic and depressive attacks.

It was pointed out how a further elaboration of these studies, which the speaker is carrying on, will undoubtedly bring out important contributions to the question of etiology of these psychoses; and the importance of studying the immediate causes in relation to the make-up, *i. e.*, the natural reactions of the personality was especially urged.

Dr. Mabon asked whether that personality—the shut-in personality—is more marked in certain types than in others of dementia præcox, and, if so, in what type. In the manic depressive groups he noticed in the circular form that 5 per cent. were of the depressed type, and 25 per cent. or 28 per cent. of the manic type. Does that bear the same ratio to the attacks? In other words, were the manic attacks more numerous in those with a cheerful personality and the depressed attacks less. It seems to him that for those who are connected with institutions, and have so many cases to examine, it opens up a field for greater work and with the promise of better results. If we can train our young men to the importance of this, both the psycho-genetic factors, and also these personalities, because they are related and correlated—if we can bring about a better understanding of our cases when they are presented to the staff meeting, we can deal with them in a more intelligent way. We will have a better understanding of the etiology of many of these conditions.

He thought that we cannot get too strong statements, too definite statements, in regard to our patients. Very often we are inclined to be satisfied with very little, whereas the exercise of a little more patience would bring out facts of the greatest importance.

Dr. Diefendorf thought the crucial test is going to come when Dr. Hoch has had the opportunity of studying personalities among normal persons. In our daily experience with people at large, as well as with the insane, one is impressed with the fact that there is a great variety of personalities. It is really a question whether or not the percentages given by Dr. Hoch are going to stand out in such prominence when we have had the opportunity to determine the various percentages of personalities among people at large.

Dr. Allan McLane Hamilton said the work had been in line with his own work that he had followed and taught for a long time. It has for years been his belief that all insanities are nothing more than the dissolution of mental habits—some more than others. The tone, or "*motif*" you might say, of mentality in all individuals is certainly marked, and it is hardly necessary to say that the characteristics of no two persons are exactly the same.

It is reasonable there should be a marked change in particular forms of mental disorder with a preponderating influence of depressed and

elated contents in special psychoses. Those of us who study dementia præcox, and other forms, should have no trouble in understanding the mechanism and evolution of a peculiar form of disorder that is developed from certain early traits. The difficulty is that we do not recognize the fact of mental make-up and its differences in individuals, but wait until the psychosis is fully developed before we make serious attempt at analysis.

When the case is studied very thoroughly there should be no difficulty in adopting Dr. Hoch's statistics. His belief is that there is no such thing as a conventional mind, but that each individual develops in his own way. Some people are open, voluble, excited or elated. Others are secretive and come under the category of the class that Dr. Hoch has spoken of as "shut-in." Ultimately when they are subjected to sufficient change or stress, or any other adequate agency, disorganization takes place, and we find the appearance of the peculiar type of insanity. This is a very suggestive and an interesting paper, and if it leads all of us to study our cases in the beginning and take into account more of the conditions that precede the actual outburst of insanity, it will be a very valuable stimulus to future work. It certainly definitely formulates what we should all know.

Dr. Ashley said it appears from Dr. Hoch's paper that the psychosis is apt to be but an exaggeration of one's normal characteristics; that is, if an individual's normal temperament is as Dr. Hoch chooses to call it a "shut-in" one, then his psychosis is likely to be one of a "shut-in" type. Or if he is normally a lively, active individual, his psychosis is apt to be of a manic form. If these theories are borne out, then we may be able to predict with some degree of certainty the form of functional psychosis a given individual is likely to develop, if any. We may even go further and predict as to the outcome. Surely Dr. Hoch's studies should be followed up by others. The scheme offered for getting at the facts is an excellent one.

Dr. Carlos F. MacDonald said we have been accustomed to view insanity and to rest our diagnosis in some cases upon the fact that insanity is characterized by a very marked change in the individual and his personality, and with it a prolonged departure from the normal mental status, but he had long advocated that in many cases the change consisted of intensification of normal traits of character as correctly indicated in the studies by Dr. Hoch.

There is no standard, no common standard of sanity, departure from which constitutes insanity. There are no two personalities precisely alike, no two cases of insanity precisely alike and yet cases resemble each other in their mental symptoms sufficiently for the purposes of classification. Dr. Hoch's paper emphasizes the importance of determining, if possible, what the normal mental status of the individual is; his deportment, habits, heredity, birth, his education, his surroundings, his temperament, character, etc. Then we must compare the individual with himself and see wherein and to what extent he has departed from that, and not compare him with any other individual, because if it is a fact that no two persons think and act precisely alike, so that every individual has his own standard of sanity, departure from which in him might be significant of mental disease, then the only true standard of comparison is with the individual himself.

He thought Dr. Hoch has done a very important work here, and

one which has thrown new light, to him at least, upon the study of mental disease from a psycho-genetic standpoint, and one it is well to follow out.

Dr. Clark said in order to get a proper estimate of this personality study we need to have similar investigations made in those cases of "shut-in" personality that do not develop dementia præcox, that run a relatively benign life history in the every-day world outside of asylums. He thought we all see cases of this latter sort, not essentially different from Dr. Hoch's "shut-in" personality cases that do not develop dementia præcox. Evidently there are other psychogenic factors as well as real somatic causes at work in the genesis of dementia præcox. The one-sidedness of the study ought to be corrected by an all-round investigation of the somatic as well as psychogenic factors. Similar personality studies ought to be made in acquired neurasthenias, constitutional depressions, psychoneuroses and borderland cases. Such studies will be of real worth in analyzing the vague terms of predisposition and neuropathic constitutions now in common use. The summation of all these studies may ultimately enable us to construct a properly detailed plan of mental hygiene for adolescents for practical use among physicians, teachers and parents. Such a plan of medico-pedagogic training of personalities during the plastic age will be of signal aid in efforts at prophylaxis against the malignant psychic disorders of dementia præcox. The helpfulness and hopefulness of Dr. Hoch's study must appeal to us all.

Dr. Meyer said in the first number of his "Psychological Arbeiten," Kraepelin spoke of the probability of different constitutions; in the same year, in the fifth edition of his text-book he turned around completely with regard to dementia præcox of which he seemed to think that it was an auto-intoxication which any one could get. This seemed to stand in too glaring contradiction with the histories of our Worcester material. Paulhan's book "Les Caractères" next stimulated Dr. Meyer to formulate his experience concerning the constitutional make-up in Stanley Hall's memorial number of the *Journal of Psychology*, in which Dr. Meyer tried for the first time to define more or less the practically important temperaments and constitutions, as judged from the results and the histories of patients. Surely there are among the so-called normal, or among who do not develop the psychoses, a great many shut-in personalities; but whenever he compared those with the shut-in personalities that go wrong, he finds differences, and it is just those differences which seem to throw the weight into the scales for the worse. He tried to describe this as a lack of sense for the real, the tendency towards the mystical, fantastic, and probably also other factors of habit-deterioration. He felt convinced that it is really along these lines that we can develop a mental hygiene, and that by these methods of the dynamic psychology we have not only worked towards something practical, but also towards the truer conception of mental disturbances.

It really does give one a different courage about one's appreciation of our knowledge of mental disease when one compares these things with the generalities like degeneracy and heredity, and the abstract psychological theorizing which may sound well but never fits the cases. With our present methods we try to handle what is at hand in the case, both in our prognosis and in therapeutics. To be sure, therapeutically, when we come to the actually broken down individuals we find that they are more fenced in than ever, more difficult to reach in the attack, and that

it is really a funeral we have to watch, unless the person recovers again to a sufficient extent to be approachable. But the prognosis and the prophylaxis have certainly been much more satisfactorily shaped by considering what the individual has as a foundation, as fighting stuff, as material of make-up, than by any of the principles that we had before. This is quite a different and a much more concrete help than the vague percentages of recovery mentioned in text-books but without any guidance concerning the reasons in each case.

It is very interesting again to note in these figures that 50 per cent. belong to a definite personality where the inquiry was not especially pointed to the matter, just as in general paralysis, 50 per cent., and later perhaps 70 or 80 per cent. were the figures of cases with fairly certain syphilitic infection. These are the figures which represent about the average standard of accuracy to which we may rise in statistics of etiology in mental disease.

Dr. Kirby thanked Dr. Hoch for this clear demonstration that types of personality can be grouped, and that certain types of make-up must be considered as factors in the genesis of mental disorders and have important bearings on the clinical form and outcome of a psychosis. The outline for examination presented by Dr. Hoch will be a great assistance as a guide in analyzing constitutions.

Our material in state hospitals does not lend itself readily to analyses of this kind. Our patients come from a very different social and intellectual stratum, and it is often difficult to get the facts for which we search. Those cases in which we do get good anamneses seem to confirm the conclusions reached by Dr. Hoch. One point he should like to discuss briefly: Is it not possible that in certain cases we are dealing, for a long time before the actual break down, with manifestations of a morbid complex rather than a special inherent type of personality? We know, for instance, that as a result of a shock or painful experience a person may exhibit a permanent alteration in behavior, capacity or mood, having acquired, in other words, what is often called a nervous disposition. It is probable that in hysteria, psychasthenia, etc., most of the so-called nervous traits and signs of instability have a connection with, or originate out of, some definite mental trauma which has preceded for a long time the actual attack which we recognize as a psychosis.

We find in dementia præcox some evidence of a similar type of mechanism as exists in hysteria, although of course there must be fundamental differences. We might therefore ask if the seclusiveness, sensitiveness, etc., which characterize a shut-in disposition are not manifestations of a complex of ideas related to a previous unpleasant experience or mental trauma. In some cases of dementia præcox the clinical picture which we call the psychosis is little more than an accentuation of certain symptoms and tendencies long manifest in the patient and having a relation to a dominant trend or complex of ideas. He would thus emphasize the importance of fixing, if possible, the time of the onset of the change in character and disposition, and seek for relation of this change to some definite experiences.

Dr. Hirsch said the question whether any individual might get either one of these two diseases, dementia præcox or manic depressive, is by all means to be answered in the negative as far as dementia præcox is concerned. Only those individuals are apt to get dementia præcox who *a priori* are of an inferior mental make-up, that is, showing a condition of degeneration in the broadest sense.

The question is whether we can group personalities in such a way as to predict mental disease in later life and the nature of such mental disease. In the first place he would like to put more stress on the disproportion between the various psychical factors, by which he means the predominance of any one factor, emotional, intellectual, etc., over another. If we study the cases from this point of view then we would undoubtedly see that those cases which Dr. Hoch calls the shut-in personality are those in whom there are certain abnormalities in the intellectual sphere and not in the emotional, the relation between the intellectual sphere and the other psychical factors is at fault. Such a predisposition leads to delusions in later life, or to delusions and hallucinations and finally to the disease which we nowadays are asked to call *dementia præcox*.

On the other hand, those cases in which the mental factor is at fault lead to hysterical manifestations or to a psychopathic condition and emotional psychoses, that is to say to any one of those psychoses which now go in this category of manic depressive insanity.

So far as manic-depressive insanity is concerned he was glad to see that Dr. Hoch is getting back to the old way of distinguishing between simple depressions, manias and circular psychoses. Dr. Hirsch still claims that it was a decided step backward for Kraepelin to take all of these different psychoses and put them in one great category, trying to make us believe that it was a new discovery.

Dr. Hoch's table shows that the etiological factor is an entirely different one in the acute manias and in the depressions. No depressive element appears in the make-up of the individual who gets acute mania, and, on the other hand, no maniacal element appears in those individuals who get acute depressions. If, as Kraepelin claimed, these forms were all one disease, why should this be so?

Dr. Stedman asked whether it is not possible to have cases of *dementia præcox* which are purely acquired, and which may come on in any personality where the shock is profound, where the amount of exhaustion is prolonged and excessive. It seems to him that one or two cases that he had seen could have eventuated in that way, but perhaps it is quite possible that he had not investigated the personality of those patients sufficiently. Now the term, the shut-in personality, is a very apt one up to a certain point. It is not quite comprehensive enough. Dr. Stedman knows one or two cases where it was not marked, but in all the cases he had found the element of hypo-conscientiousness.

Dr. Hoch said that the question which Dr. Mabon raises is an extremely important one, but, as Dr. Hoch had said in the beginning, he is not offering anything like a complete study, and is, as yet, unable to state whether there is any parallelism between the make-up and the *forms* of *dementia præcox*, or the *forms* of depression. If Dr. Diefendorf and Dr. Clark urge the study of the normal personality as a control, he can only repeat that he also would consider this to be very valuable, and that he took for comparison the benign psychoses, merely because he had that material at hand; he thinks it must be admitted that it did good service. He has no objection, if, in the manic personality, the motor side is emphasized; indeed, he has done so in what he has said, and if he spoke of it as essentially an open personality, it was with a view to bringing out the difference between it and the shut-in make-up so often found in *dementia præcox*.

Passing over to some other points mentioned in the discussion, he wished to declare that he had no desire to regard the mental causes as the only ones in dementia præcox. Why should not toxic influences or exhaustion, and the like, contribute; or why should not, as has been suggested, exhaustion produce a clinical picture very similar to that of dementia præcox? If that can be shown we should all welcome it as a distinct contribution. What he wished to claim, however, is, that in cases which later develop dementia præcox, the demonstration of personal peculiarities, of mental habits which naturally would not lead to an adequate handling of internal conflicts and the like—is another evidence which speaks in favor of the *importance of mental causes* in dementia præcox.

In answer to Dr. Kirby he would say that it is too early to make any statements regarding the nature or the ultimate significance of the peculiarities in the dementia præcox personalities which he had described. What seems of importance is that whatever they are we can express them in terms of mental habits and reactions, and he did not see any reason for denying the possibility that they might be modified by training. It is quite possible, as Dr. Kirby says, that in some cases these peculiarities might be acquired.

If Dr. Hirsh speaks of the personalities belonging in the dementia præcox-paranoia group, as intellectually abnormal, of those belonging in the manic-depressive group as emotionally abnormal, he can see, of course, that we have here the same conception which underlies the old distinction of intellectual and affective psychoses. In the first place, he is convinced that this conception does not agree with the facts and that even if such a forced distinction between affective and intellectual were to be made, everything speaks against the assumption that the difficulty in the personalities who develop paranoid states or dementia præcox is one in the intellectual and not in the affective sphere. This study was undertaken precisely for the purpose of taking the matter out of such vague conceptions with which, he, at any rate, never could do anything, and to obtain facts which we can at least clearly describe; and he agreed with Dr. Meyer, to whose studies on dementia præcox he owed a great deal of stimulation, that the vague terms of "degeneracy" and "heredity" furnish little that is satisfactory in this connection. The question is: What are, in a given set of cases, the signs of degeneracy, if that term has to be used, and what kind of reactions are inherited which endanger mental health?

Finally he wished vigorously to protest against the claim of Dr. Hirsch that the views of Kraepelin on manic depressive insanity represent a step backward. Even if Dr. Hoch's studies show that it depends to a certain extent upon the individual whether a mania or a depression develops, the essential relationship of the manic and depressive symptom complex is not touched by this, and remains, nevertheless, a well established fact which, though expressed by others before Kraepelin, has yet by no one been so clearly understood as by him. Is it not time to recognize, at last, that Kraepelin, with his conception of manic-depressive insanity, has shown us the way of analyzing the clinical pictures, which no one before him understood, namely, those of the mixed forms of manic-depressive insanity? These cases are not rare, and to have given us the key to their understanding and through them of symptoms found in many somewhat impure forms, is certainly a great step in advance.

# Periscope

Revue de Psychiatrie et de Psychologie Expérimentale

(April, 1908)

1. The Measure of Intellectual Fatigue in Children of Both Sexes with the Esthesiometer. SCHUYTEN.
2. From the Normal State to Delirium. COURJON and MIGNARD.

1. *Measure of Intellectual Fatigue.*—The author comes to the following conclusions as a result of a great number of measurements. (1) Intellectual fatigue can be measured perfectly by the esthesiometer in the sense that it always provokes a diminution of cutaneous sensibility measurable by the increase in the distance between the two points. (2) It is necessary to take into account a certain number of factors capable of modifying the purity of the results: temperature, surroundings, the state of health of the subject (nervousness, neurasthenia, fatigue produced by insomnia, etc.), the degree of the intellectual development (the intelligence), the social position of the parents. (3) The young girls show less fatigue than the boys. (4) Arithmetic and modern languages seem to be the branches which fatigue the young girls most. (5) The lessons in needle work are the hours of relaxation and repose. (6) Gymnastics are only recreative if given in a rational way, that is to say, without great bodily effort.

2. *From Normal State to Delirium.*—The authors describe two cases at considerable length. The burden of their plea is that it is difficult to define mental alienation and to limit the normal state. One is led to the conclusion that there exists intermediary types—the *demi fous* of Grasset.

(May, 1908)

1. Lesions Produced in the Nerve Cell by the Direct Action of Traumatic Agents. G. MARINESCO.
2. Note on the Amnesia of Korssakow's Psychosis. S. SOUKHANOFF.
3. Report on the Confinement in a Private Asylum of a Woman Afflicted with Delirium of Persecution with Multiple Interpretations. E. TOLOUSE.
4. A Case of Déliré à Deux. E. GELMA.

1. *Lesions of Nerve Cells by Trauma.*—This article is a critical review of the work of Schmaus, Luzenberger, Kirchgasser, Parascandolo, Szogliosi, Gudden, Cariechia and Rosa, and Roncali on the result of traumatism to the brain and cord produced by mechanical shocks. Roncali is quoted as believing that death in these cases is due to a molecular disorientation of the cells of the neuraxon and especially of the bulb, so that the material and dynamic changes are suppressed and death is due to inanition and intoxication without appreciable lesions. The author then takes up the question of the regeneration of nervous elements and cites the work of Nageotte, Strobe, Monti, Valenzi, Vitzow and Tedeschi, Lévi, Saltzcow, Golgi, Babes, Bichchowski, Cajal and others. He con-

cludes from the series of experiments on ganglion compressions that regeneration does actually take place.

2. *Korssakow's Amnesia*.—The characteristics of the Korssakow amnesia are the following: (1) Forgetfulness concerning present events (amnesia of fixation). (2) In more serious cases the amnesia affects not only present events, but late acquisitions. (3) In serious cases false reminiscences are manifested. (4) These false reminiscences are vivid and multiple. (5) Ordinarily these false reminiscences are not stable and can even be suggested. (6) Nevertheless, some become stable and stereotyped. (7) The false reminiscences of this sort attract fragmentary delirious ideas (generally of persecution). (8) The amnesia affects, even in the grave cases, only the last years. (9) Events long since past are generally retained and easily called up. (10) In the grave cases the clinical picture is that of an organic dementia.

3. *Report of Private Asylum Case*.—This case has only local interest.

4. *Case of Déliré à Deux*.—A report of two cases of *folie à deux* which both presented the conditions set forth by Falret as necessary for contagion, viz.: (1) Presence of one individual more intelligent than the other, representing the active element and imposing progressively the delirium on the second, the second being the passive element. (2) Common life. (3) Delirium resting probably on facts that occurred in the past.

WHITE.

### Journal de Neurologie

(Vol. XIII. No. 2. 1908)

1. Dementia Præcox from a Clinical and Biological Point of View. SOUKHANOFF.

2. Obsessions and Phobias. BOULENGER.

1. *Dementia Præcox from a Clinical and Biological Point of View*.—With the development of the conception of dementia præcox, secondary dementia as a clinical entity tends to pass into the background and the author thinks it a misnomer since a psychosis is probably either acute and curable, or chronic and tending to dementia from its onset. He also declares that dementia præcox is not necessarily a disease of adolescence, though it is most frequent then, and says that he has frequently seen it in persons in middle life, especially among some of the soldiers returned from the Russo-Japanese war. He thinks that while external causes may serve as an exciting cause, it depends primarily upon defective constitution of the brain.

2. *Obsessions and Phobias*.—Report of the case of a psychopathic woman of alcoholic parentage and a discussion of some very ordinary symptoms, in which nothing new is presented.

(Vol. XIII. No. 3. 1908)

1. Torticollis. BIENFAIT.

2. Chronic Alcoholism in a Child. BOULENGER.

3. The Reaction of Degeneration. BIENFAIT.

1. *Torticollis*.—Description of a case of clonic spasm in which the head was rhythmically drawn to the right at intervals of one second. The author regards the case as one of spasmodic torticollis, and discusses the pathology of this condition.



2. *Chronic Alcoholism in a Child*.—The author describes the case of a boy of seven years of age who gave a history of chronic drinking and presented the somatic and mental signs of chronic alcoholism, showing specially tremor, arteriosclerosis and enlargement of the liver. The victim was a child of the slums, of alcoholic parentage, and living amid depraved surroundings, the whole giving a terrible example of the effects of alcohol upon the working classes of Belgium.

3. *The Reaction of Degeneration*.—A discussion of the pathology of this symptom. The known effects of curare in paralyzing the end organs in the muscles, but under the influence of which no phenomenon analogous to the reaction of degeneration is observed, the author thinks disproves both the view of De Buck, who holds that a change in the nerve termination is at fault, and that of Ioteyko who attributes the reaction to changes in the muscle alone. In every case in which reaction of degeneration occurs he thinks that both nerve and muscle are affected.

(Vol. XIII. No. 4. 1908)

1. *The Ideo-energetic Conception and Psychomechanics*. I. IOTEKYO.

A plea for the scientific study of the mental make-up, and especially as to what special aptitude children and young people may possess. This, the authoress thinks, is the greatest problem which is connected with the science of education, and its working out and the shaping of individual instruction upon the basis of such data as may be obtained promises the greatest sign to social development and advance. As we have to-day a physical anthropometry, she thinks it should be possible by the experimental study of aptitudes to acquire, so to speak, a mental anthropometry. This determination of aptitudes, may permit a solution of the question of "feminism" and possibly on account of different aptitudes of the two sexes, coëducation may be condemned by the results of experimental psychology. The suitableness or not, of certain careers for women, should be settled on the ground of the presence or absence of certain aptitudes and not on preconceived ideas. By the term "Ideo-energy" she understands the social productivity of the "energetic unit" (individual), in the unit of time. Parallel to the science of the mechanics of development or "Biomechanics," she thinks that there should grow up a similar study of the development of the mental functions or "Psychomechanics." Some remarks upon psychological methods of examination follow.

(Vol. XIII. No. 5. 1908)

1. *The Treatment of Chronic Pruritus and Some Considerations with Regard to its Pathogeny*. C. PARHON and D. PANESCO.

An account of a case of pruritus in a woman of 50 years of age, which, coming on after an attack of urticaria, had persisted over four months. The administration of chloride of calcium—dose not stated—procured relief of the symptom in a few days. The authors were led to adopt this treatment on account of some physiological experiences of Loeb, and some clinical results reported by Savill, Netter and others. They think that pruritus may be due to some disturbance of the calcium metabolism, and suggest that in the calcium salts we have a valuable remedy for pruritus.

(Vol. XIII. Nos. 7 and 8. 1908)

*The Psychoanalytical Method and the "Abwehr-Neuropsychoses" of Freud.* A. SCHMIEGELD and P. PROVOTELLE.

A review of the theories of Freud with regard to the sexual origin of hysteria, and the direct development of some of its symptoms from a sexual trauma of some sort, with a short description of some cases in which they have attempted to apply the methods of this author. In each of their four cases they were able to unearth a sexual souvenir of a disagreeable sort, which they think might be considered as the starting point for the delusional and ideo-obsessive conditions which their patient presented.

C. L. ALLEN (Los Angeles).

**Neurologisches Centralblatt**

(No. 5. March 1, 1908)

1. The Arcuate Nucleus of the Medulla Oblongata. ZINGERLE.
2. Respiratory Changes of Central Origin. FRUGONI.

1. *Arcuate Nucleus.*—The author discusses the frequency with which the variations of the arcuate nuclei occur in their relation to the pyramidal tracts and their pathology in connection with various degenerations and malformations of different portions of the brain. He concludes that the arcuate nuclei and the arcuate fibers are anatomically connected, that they have no functional connection with the pyramidal tracts, but their integrity depends upon that of the cerebellum, the two hemispheres of which they are in relation.

2. *Respiratory Changes.*—Frugoni, in studying the physiology and pathology of respiration, has seen in a case of chloroform narcosis the type of respiration described by Grocco, in which the rhythm of the thoracic muscles differs from that of the diaphragm; this sign appeared just before respiratory collapse, and he suggests that it may prove to be an important clinical symptom. Also in a case of cerebrospinal meningitis, Grocco's respiration was observed following what is termed "Clonic-holorythmic" spasm of the diaphragm, characterized by a deep sighing breath with every third respiration. In discussing the cause of these and other types such as Cheyne-Stokes, and Biot's, the author attributes them to disturbances of the coördinating centers of the medulla.

(No. 6. March 16, 1908)

1. The Nucleus of the Posterior Longitudinal Bundle, the Red Nucleus, and the Nucleus Intratrigeminalis. KOHNSTAMM and QUENSEL.
2. The Influence Upon Nystagmus of Turning Movements About the Longitudinal Axis of the Body. CASSIRER and LOESER.
3. Cholin in the Cerebrospinal Fluid. M. KAUFFMANN.

1. *Nucleus of Posterior Longitudinal Bundle, etc.*—This article deals with the coördinating centers and association tracts of the brain stem. The authors have experimented on small animals using the "Combined degenerations" method, which depends upon a temporary chromatolysis in the cells of origin of fibers destroyed and a Marchi degeneration in the fibers separated from their cells.

2. *Influence Upon Nystagmus of Turning Movements.*—Results of

rotation of the body about its longitudinal axis in 26 cases of nystagmus, due to various causes, are given as a basis for studying the function of the vestibular nerve. The character of the nystagmus was carefully noted in each case both before and after turning the patient several times on a turn-table. The effect was uniform in practically all of the cases tested. With nystagmus produced by looking to the right, rotation to the right diminished or stopped it, while any nystagmus produced by looking to the left was increased by the same movement. In some normal persons nystagmus was observed when the eyes were rotated in the opposite direction to that in which the body had been turned. The argument is advanced that these effects are caused by movements of the endolymph in the semicircular canals, stimulating the terminations of the vestibular nerves.

3. *Cholin in Cerebrospinal Fluid*.—Kauffmann after having examined specimens obtained by lumbar puncture from cases of paresis and epilepsy, conditions which would be most favorable for its presence, decides against the presence of cholin in appreciable quantities in the cerebrospinal fluid.

(No. 7. April 1, 1908)

1. Concerning Alleged Word-deafness in Motor Aphasia. LIEPMANN.

2. The Reactive Character of Thought. MAZURKIEWICZ.

1. *Word-deafness in Motor Aphasia*.—Against Marie's view that all cases of motor aphasia exhibit more or less word-deafness, Liepmann thinks that the tests used are not convincing and show only that there is some lack of ability to retain recent impressions rather than that of the comprehension of language. Word-deafness may occur with motor aphasia but it is a complicating and not an integral part of it. Most cases diagnosed as motor aphasia have also lesions of more or less extent in the temporal portion of the brain and are not pure cases of motor aphasia. The lack of recognition of the frequent, extensive improvement of symptoms that takes place in sensory aphasia leads to errors in diagnosis; and misconceptions of the speech in sensory aphasia cause further confusion. In motor aphasia from lesion of Broca's area exclusively, there is no word-deafness, although there may be some defect of intelligence.

2. *Reactive Character of Thought*.—In the attempt on the part of different authors to explain the processes of normal thought, the theory of the inequality of conceptions or ideas has arisen. The writer criticises this theory, contending that all external impressions are of equal value, being only terms or symbols, and having no intrinsic strength or energy. Liepmann has shown that the function of association is more evident in the highest degree of *Ideenflucht* than in normal thought. But this view that *Ideenflucht* and normal thought occupy the opposite extremes is not warrantable. The *Ideenflucht* is one extreme, but normal thought occupies only an intermediate place, and paranoia, in which the association of ideas is unduly restricted, where the patient sticks too much to the subject, in comparison to *Ideenflucht*, where he does not stick to the subject at all, is the other extreme. Nervous systems in the lowest animal scale are capable of only immediate reactions to external stimuli, or reflex actions. The higher the place in the phylogenetic scale, the longer becomes the time of reaction. The complexities of human experience prevent an immediate freeing of impulse, for it must first pass through the association system intervening between the sensory and motor

systems; but the delayed reaction does not cease to be a reaction. The death of a friend causes a modification of reactions to external impressions of varying intensity and duration, but the intensity and duration do not depend upon the attention nor the will, but upon the relation that existed between the person and his lost friend. Multiplicity of reactions in the individual to external stimuli depends on the higher development of the central nervous system. The subject of *Ideenflucht* associates with the utmost facility all external impressions that reach him. He is many-sided and tireless. The paranoic, on the other hand, is one-sided, applying certain impressions to fit his delusion and ignoring the rest. The condition is one of activity in comparison to the passivity of *Ideenflucht*, in which every impression is taken up. Paranoia wills, inhibits and chooses appropriately (from his own standpoint). Instead of being received at their true value, impressions and observations are subjected to another process or psychic inhibition. This interference phenomenon is the mystery of abstract thought. Normal thought lies between the two extremes, most persons reacting more in the manner of the flight of ideas, and a lesser number in that of paranoia.

(No. 8. April 16, 1908)

1. The Diagnosis of Homosexuality. P. NÄCKE.
2. Mental Diseases Among Jews. M. SICHEL.
3. A Few Words Concerning the Term "Manic-depressive Insanity." WIZEL.

2. *Mental Diseases Among Jews*.—It has been generally maintained, *e. g.*, by Kräpelin, Mendel, Meyer, Krafft-Ebing and others, that the Jewish race is disproportionately afflicted by insanity. Sichel takes the opposite view, basing his opinion on the records of the Frankfort Asylum which show about the same percentages of mental diseases among the Jewish and non-Jewish admissions. Alcoholic and epileptic psychoses are much less frequent in Jews, but in all the other forms they give larger proportions than the non-Jewish.

3. *Manic Depressive Insanity*.—This short article is a criticism of the use of the term "Manic-depressive Insanity" of Kräpelin. Since the use of the word "depressive" has such a wide application in connection with various mental conditions not necessarily psychoses, the author considers its use here to be out of place, and suggests "Manic-melancholic" as a substitute, thereby preserving the term melancholic as descriptive of that phase of the symptom complex which was previously classified by itself as melancholia.

### Revue Neurologique

(Vol. XVI. No. 1. January 15, 1908)

1. Simple Polyuria and Tubercle of the Hypophysis. P. HAUSHALTER and M. LUCIEN.
2. Psychasthenic State in an Epileptic Girl Following Thyroid Treatment, Disappearance by the Cessation of Treatment, Reappearance by its Resumption. G. PARHON and M. GOLDSTEIN.
2. *Hypophysis and Polyuria*.—A child, aged six years, for nine months had excessive polydipsia and polyuria. No other symptoms were noted. Suddenly had a convulsion followed by coma and death. Autopsy

showed a tubercle the size of a nut in the base of the pituitary gland. There was also tuberculosis of the lungs.

2. *Psychasthenia and Thyroid*.—The epileptic attacks were lessened in frequency by the thyroid medication but, after six months of treatment, the psychasthenic state, with obsessions, developed. The author considers that changes in internal secretion may be the cause of this state.

(Vol. XVI. No. 2. January 30, 1908)

1. Absolutely Flaccid Paraplegia with Conservation of Reflexes; Actinomycosis of the Vertebral Column; Ascending Degeneration of the Spinal Cord with a Focus of Softening from the Fifth to the Eighth Dorsal Segments. GILBERT BALLET and ANDRÉ BARBÉ.

2. Syndrome of Compression of the Spinal Cord in a Grand Hysteric. (Association of Hysteria with Organic Diseases or Purely Hysterical Manifestations?) HENRI CLAUDE and FÉLIX ROSE.

1. *Flaccid Paraplegia with Intact Reflexes*.—The paraplegia came on suddenly and the knee-jerks and Achilles jerks were normal for twenty days, after that they were found abolished. The actinomycosis tumor caused pressure on the spinal cord.

2. *Hysteria and Organic Cord Disease*.—The author concludes that while many of the symptoms were due to hysteria there was also pressure on the spinal cord probably due to Pott's disease.

(Vol. XVI. No. 3. February 15, 1908)

1. Graphic Study of Vibratory Phenomena. Organic and Functional Clonus in Animals. ALEX. STCHERBACH.

2. A Case of Meningismus, with Aphasia, Occurring in a Child of Ten Years, During Typhoid Fever. DR. L. LAURE.

1. *Clonus*.—The author thinks that the clonus demonstrable in rabbits after vibration, or prolonged muscular tension or by slight traumatism to the spinal column is comparable with hysterical clonus in man. A suggestive condition in relation to cases of traumatic neurosis.

2. *Meningism in Thyroid*.—In the course of typhoid fever there developed some typical signs of meningitis which quickly subsided. The child was completely aphasic but recovered gradually. Attention is called to the fact that Kernig's sign was present but the case was not meningitis.

(Vol. XVI. No. 4. February 28, 1908)

1. Syphilitic Meningo-myelitis with a Rapid Course. KLIPPEL and F. DAINVILLE.

1. *Syphilitic Meningo-myelitis*.—A woman, aged 23 years, contracted syphilis from her husband. Seven years later she developed pain and weakness in both legs proceeding to complete paralysis. Died twelve months later. Autopsy showed intense meningo-myelitis but no other cause for death.

(Vol. XVI. No. 5. March 15, 1908)

1. Contribution to the Clinical Study of Paralysis Resulting from Spinal Anesthesia by Stovaine. MINGAZZINI.

2. The Side Affected in Hysterical Hemiplegia. ERNEST JONES.

1. *Stovaine Paralysis*.—Most frequent paralysis is the external rectus. The author reports a case in which the soft palate was also parietic, re-

sembling myasthenia gravis in some respects. The paralysis is probably due to a neuritis.

2. *Hysterical Hemiplegia*.—Affects one side as frequently as the other.

(Vol. XVI. No. 6. March 30, 1908)

1. Dissociation of Cutaneous from Muscular Sensibility and Astereognosis in Relation to a Case of Bilateral Lesion of the Medulla. M. A. SOUQUES.

1. *Astereognosis*.—There was abolition of muscular sense. Tactile sensibility was impaired as shown by the enlargement of the circles of Weber. The author thinks that both factors were necessary to produce the astereognosis.

(Vol. XVI. No. 7. April 15, 1908)

1. Discharge of Cerebrospinal Fluid, Hydrocephalus, Papilloma of the Choroid Plexus in the Fourth Ventricle. A. VIGOUROUX.

2. Orbital Traumatism Followed by Superior Alternate Hemiplegia. PÉCHIN and DESCOMPS.

1. *Flow of Cerebrospinal Fluid*.—A man, aged 28 years, began having epileptic attacks. A year later cerebrospinal fluid began flowing from his nose. Whenever the flow ceased the attacks were worse. Permanent stoppage was followed by death. At autopsy there was found a papilloma completely blocking the fourth ventricle and producing hydrocephalus. The fluid worked its way through the lamina cribrosa of the ethmoid into the nose until a meningitis stopped the passage and death ensued.

2. *Superior Alternate Hemiplegia*.—Syndrome of Weber following traumatism to the orbits with an umbrella.

(Vol. XVI. No. 8. April 30, 1908)

1. Bone Sensibility. MAX EGGER.

2. Stereognosis and Symbolia in the Lower Limbs. M. S. MARBÉ.

1. *Bone Sensibility*.—By bone sensibility is meant sensibility to vibration which is almost an exclusive attribute of bone.

2. *Stereognosis*.—Testing by means of moving and rolling objects about on the soles of the feet and other parts of the legs it is found that the astereognosis in certain cases has a radicular topography; it is usually lost in tabes dorsalis when there is ataxia of those members. It was tested and found absent in tabes, spastic paraplegia, hemiplegia and amyotrophic lateral sclerosis.

(Vol. XVI. No. 9. May 15, 1908)

1. Degeneration of the Posterior Columns of the Spinal Cord Associated with Descending Degeneration of the Pyramidal Tract in Hemiplegics. G. GUILLAIN.

2. Babinski's Sign and Dissociation of the Deep and Superficial Reflexes Caused Experimentally in Man. Semicologic Value of the Dorsal Reflex of the Foot. A. SCHERBACK.

1. *Degeneration in Hemiplegia*.—The degeneration in the posterior columns is due to arterio-sclerosis and is merely a coincidence.

2. *Babinski's Sign*.—By systematic local vibration the superficial reflexes may be lessened or abolished while the deep reflexes are exaggerated. By application to the sole of the foot the sign of Babinski is

produced but it is evanescent and not permanent as it is from organic disease.

C. D. CAMP (Ann Arbor).

### Zentralblatt für Nervenheilkunde und Psychiatrie

(Vol. XXXI. February 15, 1908)

*Psychical Disturbances Accompanying Vasomotor Neurosis.* ROSENFELD.  
(A contribution to the study of functional psychoses.)

In two former communications the author reported six cases in which psychical disturbances accompanied vasomotor neurosis; in this paper he wishes to add seven more similar cases. The clinical picture is characterized by marked vasomotor disturbances, such as akro-neurosis, akro-cyanosis, changeability of color, hyperemia of the brain, dermatographia, cardiac discomfort without tachycardia, occasional slowness of pulse, severe diaphoresis, nausea and vertigo while lying, walking or standing. In several cases transitory speech disturbance and peculiar ataxia in gait and motion were demonstrable. All these symptoms could not be explained on organic bases. The mental features varied considerably. Some patients were apprehensive, restless, egocentric, depressed and expressed delusions. In one case marked psychical retardation was present. In other instances fear of death, apprehension associated with cardiac discomfort, ideas of self reproach, mental insufficiency, hopelessness and crying spells were quite apparent. These attacks recurred but recovery each time was complete.

Rosenfeld maintains that such a symptom-complex should be regarded as a distinct clinical reality by itself. However, one should not lose sight of the fact that in many forms of mental alienation temporary trophic aberrations are frequent accompaniments.

(Vol. XXXI. March 1, 1908)

*Moëbius's Collection of Degenerative Morphology in Leipzig.* JENTSCH.

In this article Jentsch describes Moëbius's collection of degenerative morphology in the Leipzig Museum.

(Vol. XXXI. March 15, 1908)

1. The Form of Speech Disorder in Manic Depressive Insanity. PFERSDORFF.

2. Complex and Disease Causes in Dementia Præcox. E. BLEULER and C. G. JUNG.

1. *Speech Disorder.*—Pfersdorff maintains that the speech disorder in manic depressive insanity is of two forms—in one the motor and in the other the sensory mechanism is affected. As an illustration of the former are words or ideas produced without definite associations; and of the latter, sound associations are in evidence.

2. *Dementia Præcox.*—Bleuler maintains that the complex does not cause the disease in dementia præcox. He differentiates between primary and secondary symptoms. The former is ascribed to an organic process, which is not explicitly defined, and the latter are brought into activity by a complex. Hence the disease, *per se*, of dementia præcox (that is

the unknowable organic process, whatever it may be) may exist for a number of years without being recognized. He fully emphasizes that the symptoms of the clinical pictures are determined by the complex. No woman, who is not longing for children or fears childbirth, will react to hallucinations or delusions governed by the content of such a complex. It is utterly impossible to conceive how symptoms may develop without psychical causes. Jung agrees with Bleuler that the content of the complex modifies the symptoms in dementia præcox. The acute attacks, exacerbations, aggravations, remissions, etc., frequently arise from psychological causes and most probably reactionary to peculiar brain disposition.

Jung is not exactly clear about the latency in dementia præcox, the so-called organic process, and the limitations between primary and secondary symptoms. He thinks, with Bleuler, that dementia præcox may develop from psychological grounds into an organic process. In the words of Jung: "An influence of an effect, like any psychical cause, can loosen the organic process of dementia præcox (through toxins) and indeed simulating the manifestation of tuberculosis in a contused joint. The disease develops in a *locus minoris resistentie*, that is, in dementia præcox the entire physical like the psychical disease process can develop from an affective complex, exactly like under any other conditions from psychical trauma, infection, etc. If the complex were not in such a case, then the peculiar disease would not develop under these circumstances. Therefore, for such cases, the complex had not only the usual determinant as far as its content is concerned, but also a significance for the origin of the organic process."

MORRIS J. KARPAS.

### Journal de Psychologie, Normale et Pathologique

(Fifth year. No. 3. May-June, 1908)

1. One Form of Combined Psychasthenia and Delirium. F. L. ARNAUD.
2. The Influence of the Chinese Language upon that Nation's Mentality. LEGRAND.

3. Note upon Individual Auto-mutilation. CHARLES BLONDEL.

1. *Combined Psychasthenia and Delirium*.—It is less than twenty years since alienists almost universally agreed that there existed a profound incompatibility between so-called conscious obsessions and a true delirium. The delirious and the obsessed constituted two classes of cases utterly exclusive of one another. Under the influence of numerous writings, French as well as foreign, published during the last few years, a complete change has been wrought in the above opinion, so that there is scarcely a person today who does not admit, not merely the possibility but the frequent observation of, the actual combination of obsessional and delirious states.

Before the Congress of Geneva-Lausanne, Arnaud alluded to three principal forms or modes of association between delirium and psychasthenia, a disease of obsessions, without provoking the least adverse criticism. He described the first as the delirious crisis, appearing very abruptly. Here the delirium overwhelms and masks the symptoms of the obsessional state so that the latter is unrecognizable. Ultimately, however, the crisis vanishes and the previous mental state reappears. One might speak of this as a delirious accident occurring in a psychasthenic



just as it might have occurred in any other predisposed patient. The second class of associated delirium and obsessions includes cases in which the two sets of symptoms coexist very clearly, remaining very distinct from each other, and having a more or less slight and logical connection with one another in such a way as to render the clinical picture of the association exceedingly complex. Here, as Falret and most authors after him declare, the delirium is one of persecution with tendencies toward melancholia. It develops gradually, becomes fixed and systematized, and terminates in a definite chronicity. Dissimilar as the two preceding modes of combination are from the clinical point of view, they nevertheless possess a uniform characteristic from the psychological standpoint. The delirium, whatever its relations to the obsessional state may be, is always composed of elements, in both cases, distinct from the accompanying obsessions, elements wholly extrinsic and in a measure quite foreign to the obsessions. Hence there is a complicating of one mental state by another mental state, the nature of which is decidedly different.

The third mode of combination, to which the present article is especially devoted and which the author illustrates with three clinical reports, includes those cases wherein the delirium, in all of its essential traits, has its roots wholly in the obsessional state; or, to be more definite, is constituted of the very obsessions themselves, the manifestation of which is carried to such a high degree of exaggeration. The delirious ideas here preserve all the general features of the ordinary obsessions of psychasthenia. This is the reason why the author, in collaboration with Professor Raymond, has named this form of delirium psychasthenic, delirious psychasthenia.

2. *The Influence of the Chinese Language upon the Nation's Mentality.*—A long but interesting article, to indicate how the inflexibility of the Chinese language has had much to do in stultifying and retarding the mental processes and mental development of the nation as a whole.

3. *Individual Auto-mutilation.*—Blondel finds that self-mutilation is not a special symptom of any one form of mental trouble. The conditions only under which it has been practised are occasionally able, as the result of a searching examination, to reveal the reason for it. The author points out some of the commoner forms of self-mutilation. He applies the term *indirect self-mutilation* to those cases wherein an unfortunate individual, mentally defective, succeeds in persuading a surgeon to perform upon him an unnecessary operation. The suggestive remark is made in closing by the author that such indirect self-mutilation "most obviously needs the concurrence of two diseased wills, for one volition, when manifestly diseased, can only secure the cooperation of another volition when that is likewise more or less debilitated."

METTLER (Chicago).

### Miscellany

CLINICAL AND ANATOMICAL STUDY OF MULTIPLE SCLEROSIS. Raymond and Rajes. (L'Encephale, Vol. II.)

A case with autopsy, where besides old lesions, those in process of formation were found explanatory of the mode of invasion. In the course of the disease an edema occurred which the authors believe to have been trophic. It began spontaneously two years and a quarter before death by weakness of the legs, clumsiness of the hands and failing vision. These symptoms remitted after about six months, to reappear a month later.

About a year after the commencement, abundant lymphocytosis was found. At this time, he was unable to walk, being very spasmodic and feeble, with exaggeration of the reflex of Babinski on both sides. The upper extremities presented intentional tremor; there was incontinence of urine. There was nystagmus and diminished visual acuity. The speech was merely slow, and there was no vertigo. Some months later began an edema localized to the legs; it was hard, smooth, painless, the skin being reddened and showing desquamative pityriasis. The muscles became more atrophied, bulbar symptoms appeared, while nystagmus disappeared, patient became edematous, cachectic and died of bronchopneumonia. At the autopsy this edema was found to be lardaceous and not to pit on pressure. In the nervous system, gray patches were found in cerebellum and bulb, a few in the cerebrum and very numerous in the spinal cord especially in the dorsal lumbar. Some of these, especially one in the sacral region, had a reddish tinge and projected from the surrounding tissue upon section. Some of these patches were badly limited passing insensibly into the neighboring tissue. They consisted of neuroglia generally in the form of a network sometimes with numerous nuclei, often with more fibers in the center and quite areolar where the lesion appeared to be diffusing into the surrounding tissues. In the latter, the myelin was varicose and stained badly, but had not disappeared. In some portions the destruction of the myelin was out of all proportion to the neuroglia proliferation, which leads the authors to believe that the former may be a secondary process.

In these areas, the nerve cells were much altered, and even the axis cylinders could not be distinguished in the more fibrous patches and were varicosed and altered at the periphery. The vessels were increased in number, had thicker walls, and contracted lumina sometimes quite obliterated, and round the neuroglia nuclei were more abundant. In places there were narrow disintegrated zones or even cavities and occasional hemorrhages.

The meninges showed some areas of slight thickening and occasional clusters of small round cells. Many of the muscles were degenerated, the liver showed exudates of round cells in the portal spaces and slight connective tissue proliferation. The kidney was intensely congested, slightly sclerosed, and showed desquamative epithelium in several places. The suprarenals were congested and much infiltrated by leucocytes.

The authors discuss the pathogenesis of these appearances, demanding whether they are those of a primitive multiple sclerosis on which is implanted a secondary myelitis or whether they are not all due to the same toxic-infectious process in favor of which they emphasize the visceral lesions and the state of the blood vessels in and around the patches. It may be remarked that the clear demonstration in this case of an evanescent lymphocytosis disposes of the contention that some of the cases of multiple sclerosis in which Babinski had observed a lymphocytosis were the pseudo sclerosis en plaques of cerebro-spinal syphilis.

TOM A. WILLIAMS (Washington, D. C.).

ROOT GANGLION COMPRESSION IN CORD TUMORS. Le JONNE (*L'Encephale*, Vol. II, No. 3).

This valuable study is founded upon 15 cases of cerebral tumor examined in the laboratory of Raymond. All the cases had been studied clinically with that care characteristic of the clinic Charcot. The author

points out how in many cases no symptoms draw attention to the increased pressure in the spinal portion of the thecal sack; but that a careful inquiry usually elicits evidence of the symptoms until they are masked by the graver cerebral ones. Some slight pains at the neck, a little numbness of the arms or legs or a disagreeable wet sensation in the morning, the diminution, followed by the disappearance, of the patellar reflex followed by those of the arm.

Such symptoms as incoordination and vascillating walk are, however, difficult to distinguish from those derived from the disturbance of the cerebellum usually present; but radicular sensory troubles are pathognomonic, subjective or objective even, though their limits are not absolutely precise. He points out the invariability of these, once constituted and the great importance of the diminished sensibility to vibratory impressions. In one case, gastric and intestinal crises occurred, but though any or all of these symptoms fail, the manometric pressure of the cerebral spinal fluid is always increased in amount by two or three times and should always be sought if any diagnostic doubt arises, as this does not occur in tabes, general paralysis, Pott's disease, multiple sclerosis, which may give rise to similar signs. The author differs from Sicard, for he believes fallacious the estimation of increased pressure without the manometer.

The lesions he has found have in all cases been of the same type and at the same situation, at the point established in 1894 by Nageotte. He however differs from Nageotte as regards the pathogenesis of the changes found. We find dropsy of the dural canal, of the ganglia and of the radicular nerve, sometimes indeed, almost cystic in extent. The nerve fibers instead of being closely packed together are separated one from the other. This condition is aggravated in proportion as one approaches the nerve of conjugation. Some of the fibers are even flattened. It is the posterior root which is the more affected. The author agrees with Sicard and Cestan in believing this due to the greater compactness of the former. For these appearances it is not necessary to invoke the toxi-infectious mechanism of Nageotte. The circulatory troubles are minimal, and the author has never observed that proliferation of connective tissue cells upon which Nageotte insists, nor the peri-neuritis, endo-neuritis nor infectious phlebitis also described by the latter. He believes these must have been due in Nageotte's two cases to a coincident infection.

This mechanical distension is most marked in the cervical region but varies from root to root, perhaps on account of individual physical arrangement. The effect on the nerve fibers themselves may either be local or at a distance and does not differ from that described by Batten and Collier, and Nageotte. The process begins by a granular disintegration of the myelin, rarely affecting its whole thickness, but "*corps granuleux*" are never found in the peri-vascular lymphatics. There may be a few small granules in the axis-cylinders; later on the demyelination is complete and sometimes even the axis-cylinders become swollen and fascicular. Sometimes they are small, flattened and in folds; they never disappear. These lesions are proportional to the mechanical dislocation of the connective tissue. Cellular lesions in the ganglia are not apparent. In the cord the lesion is limited to the cornu-radicular zones. It is when the large fibers spread themselves out from the root, however, that the lesions are

most marked. The cornu commissural zone is normal, as are the endogenous fibers, while the short and medium fibers seem less affected than the spino-medullary. Lissauer's tract is spared. Everywhere the axis-cylinder persists. There is no sclerosis, and the neural lesions resemble those described in the root. The author did not find the degeneration of the direct cerebellar tract described by Batten and Collier, nor did he find the changes in the anterior horn described by Myer, Pick, Hoffman, etc. He never observed the dilatation of the central canal described by Homen. As regards the pathogenesis, he thinks it useless to discuss the old theories, for their authors were unaware of radicular lesions.

Lejonne subscribes to the doctrine of Nageotte, "Les altérations des racines postérieures dans la moelle sont causées par l'action de la lésion primitive située dans les nerfs radiculaires." But he thinks that any toxic or infectious factor must be very rare; for he has made cultures and has injected animals, and has never found the least evidence of such, the liquid has always been clear, has left no clot, and has been practically free from cells. The reader is referred to the admirable illustrations of the article for the evidence of the mechanical nature of the infiltration there shown, where the intra-fascicular spaces, virtual in the normal state, are enlarged by the pressure and the appearances described are beautifully figured. He was unable by experiments upon dogs to produce similar lesions; for he was unable to devise measures to prevent the rapid absorption of the excess of liquid; but he believes he has already offered enough evidence to differentiate the pathogenesis of these changes from the apparently similar ones occurring in pernicious anemia and other cachexiæ, and above all in *tabes dorsalis*. The history of seven of the cases is given.

TOM A. WILLIAMS.

IDI GAMY. Paul Mantagazza (*Zeitschrift f. Sexualwissenschaft*. Vol. I., 1908, No. 4).

By idiogamy the author understands a complete or almost complete sexual impotence with all women except with one's wife or with some definite women. A strong young man of no matter what race when in a condition of *plethora spermatica* is able to have sexual congress with almost any woman, be she pretty or ugly, young or old, though there may not be the slightest sympathy between them. The relations of husband and wife are subject to many psychical elements, especially of an esthetic nature, which are liable to disturb or hinder sexual union. The more automatic and animal-like the act, the more its resemblance to an outburst, the better and healthier is the union. It might be more human than animal, but it will mostly be at the cost of love and posterity. In some the predilection for beauty is so enormous that it dominates their strongest desires. Such aristocrats of love are powerless in the presence of not pretty women. They can only have relations with pretty or with the prettiest of women because they must at the same time satisfy their esthetic tastes. The ideal of a perfect love would be, to be in position to choose one woman out of thousands who should correspond more than any other to our esthetic tastes, to possess her only and never evince any desire for any other. This ideal is not at all impossible; it is more often realized than we imagine. But it is not always due to a refined esthetic or a highly developed morale of the one who strives to bring it about; it is mostly due to the fact that we are unable to have anything to do with

women who deviate much from our ideal. Idiogamy therefore often originates through esthetic, less often through moral reasons. Among esthetic idiogamies can be cited those who can choose only fat or thin women, blond or brown women. In the broadest sense we would call idiogamists those white men who marry Hottentots or negroes. Clinically, therefore, we have real idiogamy when, due to esthetic or moral reasons, coitus is impossible in spite of the firm will and challenging caresses of the woman. As an example of moral idiogamy are those originating through ethical convictions. The most usual form is that found among those who are impotent when confronted with prostitutes, whereas they are quite potent with other women. The author then cites a few interesting cases illustrating his views.

A. BRILL (New York).

**INTRACRANIAL ABSCESS DUE TO THE TYPHOID BACILLUS.** Fraser B. Gurd and T. B. Nelles (*Annals of Surgery*, XLVII., 1908, No. 1).

A man 25 years old was brought into the hospital in a stupid condition, with a history of having been struck upon the head a month previously, and having had since then a lump on the right side of his cranium. He had on admission a temperature of  $101^{\circ}$ , some rales over the lungs, a badly coated tongue, enlarged spleen, but no rose spots. There was an edematous and tender spot upon the right side of the head in front of the ear, occupying an area as large as the palm of one's hand, and at the posterior part of this area over the parietal region there was apparently a depression of the bone. There were no pupillary disturbances, paralysis or sensory anomaly, knee jerks and abdominal reflexes absent. Stiffness of the posterior neck muscles and Kernig's sign present. Two days after admission a positive Widal and a diazo-reaction were obtained. The patient showing no improvement after five days' observation, it was decided to operate. An abscess of the scalp was found under the swelling, and when the bone was exposed there was seen a linear fracture of the parietal and frontal bones, with depressed bone posteriorly. A trephine opening was made posteriorly and then enlarged with the rongeur. An organized blood clot was then found overlying the dura and upon the surface of this clot was spread a thin layer of pus. The depressed bone was elevated, the clot cleaned out, and the cavity irrigated, and packed with gauze. The patient's temperature remained elevated and the case ran the usual typhoid course, dropping to normal three weeks after the operation. Bacteriological examination showed both in the pus from the scalp abscess, and in that from within the skull, a bacillus giving the characteristics of the typhoid group, and the same organism was recovered from the blood. The patient made a good recovery and shows no brain symptoms.

C. L. ALLEN (Los Angeles).

**PUNCTURED FRACTURE OF THE SKULL.** George G. Ross (*Annals of Surgery*, XLVII., 1908, No. 1).

An interesting case of a man 21 years old, in whom the point of an umbrella stick entering the nose, forced its way through the walls of the antrum, the floor of the orbit, and the wing of the sphenoid bone at the base of the skull, and entering the left temporo-sphenoidal lobe produced an abscess which resulted fatally. The history being obscure and the localizing symptoms practically nil, the patient was kept under observation for four days. At the end of this time, a left hemiplegia developing, and the signs of cerebral pressure being unmistakable, he was trephined

over the right parietal bone, the opening enlarged and the abscess discovered and drained. Death took place two days later, a post-mortem examination disclosing the state of affairs already mentioned.

C. L. ALLEN (Los Angeles).

#### SOME MORPHOLOGICAL PECULIARITIES IN THE SPINAL GANGLIA OF MAMMALS.

Ottorino Rossi (Journal f. Psychologie u. Neurologie, Vol. XI, Heft 1-2).

The author asserts that the cell of the spinal ganglia which was hitherto considered a very simple structure is a very complicated structure when examined by the reduced silver method of Ramón y Cajal. By investigating some of the morphological peculiarities of the spinal ganglia cells, conclusions can be drawn to support the new views in the realms of the general pathology of the nervous system. The theory of the so-called "collateral regeneration" formulated by Nageotte and accepted by Cajal is especially considered. The object of the investigation is to find out which formations of the spinal ganglia are normal, or rather constant, and which are connected with morbid processes, and whether any of these formations give evidence of being carriers of any regenerating activity.

The first cell type considered is the "celulas desgarradas o seniles" described by Cajal and found by him in persons over sixty. Marinesco employed the same methods and found these cells in a case of general paresis who died at the age of forty-five. The author found them in a twenty-year-old man who died of pneumonia, and in a twenty-two-year-old woman who died of typhoid. Both cases showed no nervous lesion. The same cells he also found in a young dementia præcox. The characteristic expansions of the cell body, the supposed continuations of the protoplasm, which according to Cajal especially belong to senility, and which Marinesco found in some diseases of the nervous system, were observed by Levi in the spinal ganglia of chelonia and also in some teleosts and in a young cow by the author, who concludes that they are not exclusive morphological manifestations pointing to an abnormal state of the ganglia cells.

After briefly reviewing Golgi's meshes the so-called theory of "collateral regeneration" is considered. Cajal in his work on the ganglia called attention to a morphological peculiarity also observed by Huber and mentioned by Barker which he called "bola." A bola is the globular swelling found on the end of the fibrous continuation of the ganglia cells. Cajal assumed them to be organs which might have certain kinesthetic functions or sensibility, and through which the cells and eventually the cord may receive a definite stimulation destined to regulate the sympathetic system of the blood vessels. Levi later found these bolas in mammals and showed that they were fibrillary structures. Nageotte formulated the most original hypothesis about them. As he observed them to be more abundant in the ganglia of tabetics than in normals, he concluded that they were the exponent of a special and characteristic regeneration which he called "collateral regeneration" to distinguish it from the terminal regeneration occurring when the continuity of a nerve is broken. He, however, states that this regeneration does not gain its purpose. This hypothesis was accepted by Cajal, Dejerine and Thomas, but Levi found bolas in the appendages of cells in many animals at a very early period of their ontogenetic development, he also found that almost all cells in the cerebral ganglia of primates have club-shaped appendages. The logical consequence of Nageotte's theory would be that al-

most all cells of those ganglia, even in normal conditions, are in a process of regeneration. It is also inconceivable that regenerative processes should be most intense in such diseases as tabes and general paralysis. The same formation can also be found in individuals not afflicted with these diseases. Nageotte's conception should be considered only as a hypothesis having many weak sides and not in accord with many familiar facts. The author illustrates his points with many pretty drawings.

A. A. BRILL (New York).

SENSORY DISSOCIATION AS A SYMPTOM. H. Mettler (Journal A. M. A., February 8).

Using as a text a case of syringomyelia which is quite fully reported, the author discusses the subject of sensory dissociation, pointing out that the so-called syringomyelic syndrome, loss of pain and temperature sense with preservation of the tactile sense, is no longer to be considered pathognomonic. It is to-day an established fact that syringomyelia can exist without the dissociation syndrome and that the latter can occur without the former. The lack of stability and uniformity of the syndrome in syringomyelia and the occasional involvement also of the tactile sense in this disease also affect its value as a distinctive sign. It is not only variable and unstable in syringomyelia itself, but as a syndrome, it is not infrequently observed in many other forms of disease. Mettler goes on to show that all sensations are only elaborations of the primary phenomenon of protoplasmic contact, that the distinction of the originally recognized five senses is itself really a form of sensory dissociation. The effects of drugs, of hypnotism and the recorded cases of dissociation of special senses in normal individuals are also mentioned. There are to-day, Mettler says, three hypotheses or general conceptions of the origin, nature and course of sensation. The first, and perhaps the most popular, rests on the old notion of the "specificity of nerve function"—that for every special form of sensory manifestation there is a special nervous element, either in the peripheral nerves, the peripheral end organs or the central ganglia or brain centers. The second is an almost purely psychologic one, making sensation a pure content of mind, strictly a psychosis. The third conception strives to harmonize the above somewhat opposing views. "It teaches that by means of intercalated neurones, ganglia and relay stations of gray matter an impulse that starts from the periphery as a mere chemical or molecular disturbance is so added to, modified and elaborated in its progress upward toward the center of consciousness in the brain that by the time it has arrived at these centers, and not before, it has become all that we mean by the specific term. Sensation is thus a direct product of histophysiologic activity, but it is a physiologic elaboration or summation. It does not exist at the periphery; it is only complete at the center." The author's view is that dissociation phenomena should not be looked for in mere coarse anatomic differentiation. Sensation, with all differentiations, dissociations, etc., is, in its ultimate analysis, a psychophysiologic phenomenon. "Its interpretation, therefore, involves, essentially and integrally, the interpretation and explanation of mind." Clinical dissociations are not matters of mere anatomic structure, but of disturbed functional activity. They are not very valuable symptoms *per se*, because, in the first place they are common both in normal and abnormal conditions, and in the second place they are not dependent on direct, observable, histopathologic changes, but on indirect, all but unknown and unexplainable differentiations in the extra-neural stimuli and in the processes underlying pure psychoses.

## Book Reviews

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TREATMENT BY HYPNOTISM AND SUGGESTION OR PSYCHO-THERAPEUTICS. By C. Lloyd Tuckey, M.D. Fifth edition. G. P. Putnam's Sons, New York.

The fact that this book by Tuckey has gone through the fifth edition leads the reviewer to consider it with some care. The popularity of the present book seems to suggest that there is a demand for works on hypnotism. If it is assumed that this work of Tuckey's is a serious attempt to apply what he conceives to be a therapeutic measure towards the cure of disease, then the results which he has obtained and which he supports by the recital of actual cases, must be viewed from a medical point of view. If, on the other hand, his chief purpose is to convince the doubting reader that there is such a thing as hypnotism, then his argument is addressed to the unintelligent laymen and as such should be judged from the semipopular point of view. The usual failing of a book of this kind is for the author to assume that hypnotism is a matter of mystery, that its existence is doubted and for that reason that his chief effort must be directed towards convincing the reader that he, himself, is neither a fakir nor a charlatan and that the use of hypnotism is a legitimate therapeutic means. As means of argument, Tuckey, like others who have written on this subject, concerns himself largely with the history of hypnotism, the quarrels of the schools of Nancy and Charcot, and finally ends his book with the garbled and unsatisfactory clinical history of cases that have been mysteriously and unaccountably cured by hypnotism. It will be admitted that every intelligent physician, to say nothing of the laymen, admits that suggestion is a very valuable therapeutic measure, that hypnotism is quite an everyday occurrence, that hypnotism and suggestion are essentially the same, or perhaps suggestion may be considered as the most important measure towards the production of artificial sleep. It might be suggested likewise that physicians at present are not concerned with the quarrels that formerly divided French scientists on this subject. What they are vitally interested in is the clinical side of the question, the case reports as such and the therapeutic results and the methods of application. In these respects this book of Tuckey's fails as so many of the same kind have. A glance at what might be called the clinical side of the book will illustrate this clearly. Here is a list of some thirty odd cases which are said to have been cured by the use of hypnotism. These cases must be regarded as proofs of the truth which Tuckey aims to support. This book is apparently addressed to medical men, and the reader is asked to read the book as an example of medical literature. Yet, in all of these case reports there is not a word said of the data of physical examination; the data that we rely upon to test both our diagnosis and the success or failure of treatment. The writer perhaps desires that his readers are to take such things for granted.

In examining these cases we find as examples the following:

Case 16 is from the clinic of Van Edeén at Amsterdam. It is a case of neuralgia of the neck and left shoulder, paralysis of the left arm and leg of syphilitic origin. This patient was hypnotised for six weeks daily and improved very much. Now, we are ready to question whether



he received any mercury in this interval. If he did, where does the hypnotism come in? If he did not, the diagnosis is questionable. There is no mention of this at all.

Case 7, Articular Rheumatism. Cured completely in a few sittings. There is no report of the heart examination, no particulars of the results of the physical examination.

Case 28, Epilepsy. No data on the nature or frequency of attacks nor is mention made of the use of bromide. The therapeutic results are stated as follows: "Her fits are less frequent, decidedly less violent and she is able to go to dances and enjoy herself." These are examples taken at random, of the clinical side of these cases.

In the final summing up of the merits of this book, we are led to admit that it is as successful as it is possible to make a book when the strictly objective and scientific aspects have been entirely lost sight of. As long as an author confuses the issue as Tuckey has done, and writes a book on hypnotism, as one having a mission to perform, and uses the same means by which a crusade might be established, so long will a book like this fail. If the enthusiastic supporters of hypnotism desire to advance their cause, they should write a book in which hypnotism is regarded as a legitimate therapeutic measure. They should give a careful history of their cases, an account of their methods and the results of their treatments, using the statistical method as much as possible. In this way it would be easy to see what hypnotism can do and what it can not. It would be easy to compare its use with other methods and to determine in what points it was superior. That this book of Tuckey's does not, in any sense, approach the standard as here set out, is the chief reason in the reviewer's opinion why it should not reach an increasing audience, and why as a contribution to the art of therapy it is a failure.

SIDNEY I. SCHWAB.

THE SEXUAL QUESTION. A SCIENTIFIC, PSYCHOLOGICAL, HYGIENIC AND SOCIOLOGICAL STUDY FOR THE CULTURE CLASSES. August Forel, M.D. English adaptation. By C. F. Marshall, M.D. Rebman Company, New York.

In his preface, the author says "This book is the fruit of long experience and reflection." To the reviewer, who has read the book carefully, there is no indication that it is. "In recognition of the immense progress of education, it behooves us to prepare for our children a life more happy than ours." If "our children" will read pp. 423, 424, 425, 426 they will not be happy if they have been brought up in the tenets of the Christian faith, and if "our children's" parents read them, there will be no children. To say that these pages are the most vulgar, the most disgusting, the most banal expressions of sentiment or belief that have come from any man who claims to rate as a scientist and as a scientific, educated physician, is to put the situation mildly.

After an enumeration of the various methods of preventing conception and procreation by pessaries, sponges, douching with water acidulated with vinegar, etc., which he does not recommend ("Any one who depends on such uncertain measures runs the risk of being abused"), he takes up the matter of condoms or as the translator terms them "French letters." Forel gives his preference to "letters" made of animal membrane, especially those made of the vermiform appendices of certain animals (possibly the hog); "when these articles are strong they are excellent." The following precaution should be observed.

First, an india rubber ring must be used adapted to the size of the

erect penis, and placed at the root of the penis over the membrane. If the glans penis is anointed with a little vaseline and the membrane soaked in water, the presence of the latter is hardly noticed and sensation is not impaired. (There is nothing in the preface of the book to indicate that any part of it is autobiographical.)

"The penis should be withdrawn while it is still erect, and the membrane and ring held by the finger during withdrawal. The latter is washed and dried, then blown up with air and closed at its base. It is left full of air until the morning." But when it is used in the morning we presume that it is left full of air until the evening. "Then it is blown up more completely to prevent stiffening; it is then ready for use again." But is the user ready for use again? That is the rub. If the user is not ready, will the used be any less ready for use, when the user is ready? We regret that the distinguished writer did not discuss the psychology of this. Long details are given how to prepare vermiform appendices purchased from the butcher. The reader is assured that the mucous membrane of this is about the same consistence as that of the vagina and that they cause no diminution in sensation. Disgusting, commonplace, cheap and perhaps injurious are the adjectives which the reviewer uses to characterize this book.

He has examined it carefully and he has been unable to find a page or a paragraph which would be aidful to the infirm or illuminating to the healthy. It has not the excuse of being either scientific or entertaining.

J. COLLINS (New York).

## Notes and News

The Sixth International Congress of Psychology will be held at Geneva, from August 3 to 7.

*American Medico-Psychological Association.*—The annual meeting of this association will be held in Cincinnati from May 12 to 15.

Dr. Alfred Gordon, of Philadelphia, has been elected a member of the Société Médico-Psychologique of Paris.

*Outdoor Department for Mental Diseases at the Vanderbilt Clinic.*—A department was opened five months ago at the Vanderbilt Clinic, to which cases of incipient insanity or borderland conditions may be sent for examination and advice. Physicians referring patients to this department will be furnished when desired with diagnosis and suggestions for treatment. Tuesdays and Fridays 2 to 4 P. M.

*St. Lawrence State Hospital, Ogdensburg.*—A free dispensary, for consultation only, has been established in connection with this hospital. Hours of consultation, Saturdays only, 10 A. M. to 3 P. M. Communications should be addressed to the superintendent, Dr. Richard S. Hutchings, Ogdensburg, N. Y.

A banquet was given to Dr. Charles K. Mills on March 13 in celebration of the fortieth anniversary of his graduation in medicine. Dr. G. E. de Schweinitz acted as toast master, and addresses were delivered by Dr. S. Weir Mitchell, the Rev. Dr. Conger, Dr. J. J. Putnam, Dr. A. Jacobi, and Dr. Wm. H. Welch. Dr. W. W. Keen presented a loving cup, with a few well chosen words, to which Dr. Mills responded. More than a hundred men attended the dinner, many coming from Chicago, Pittsburgh, Baltimore, Boston and New York.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### MOTOR ATAXY FROM EMOTION<sup>1</sup>

BY S. WEIR MITCHELL, M.D., F.R.S.

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I have had some difficulty in finding a descriptive title for this short paper. I shall introduce what I have to say by stating briefly the very representative case of Mr. X, a builder, Indiana, married, aged 45. He has never had any serious malady; in fact speaks of himself as having always been healthy and strong, but inclined to be what he calls nervous. Both of his two children seem to have inherited this unfortunate temperament. He worked hard for years, without holidays, with few pleasures, but with no excess of alcohol or tobacco. So good was his memory that in his business for many years he trusted it alone and kept no books. This seems to me to have involved an unnecessary and continual mental strain.

After a quite serious trouble with some workmen in his employ about twelve years ago, the condition for which he consults me began to become too obvious to others to escape the attention it had long had from the patient.

The only matters concerning his physical state which are worth record are that his muscular power is good, that he has no spinal ataxic conditions, that sensation is perfect, his knee jerk absent until reinforced. This, he says, has been the case for many years. Gait and station are good and his vision is in all respects normal. I may add that his usual handwriting is distinct, clear and without tremor. But for the last twelve years and

<sup>1</sup> Read before the Philadelphia Neurological Society, February 26, 1909.

for some time before, he has had increasingly the condition which I have ventured to describe as emotional ataxy of a temporary character. He finds himself at times unable to write plainly in the presence of people who are overlooking him. Thus, to sign a hotel register or a business paper when overlooked results in the first letters of his name being correctly penned, and then in abrupt and excessive irregularity of the signature and with the hand flying off at times across the page. On other occasions, the first effort to sign his name results in wild movements of an ataxic character, and in a signature which is practically unreadable. There are other manifestations of this peculiar ataxia. At times—not always—he is compelled to leave a dinner table, since when with strangers it is almost impossible for him to feed himself. He may then become almost helpless, requiring both hands to get a cup of coffee or a glass of water to his mouth. When quite alone this rarely occurs, unless something strikingly reminds him of his former failures. If he is in a room with a good many people who are not paying any attention to him, he has none of this trouble, but two or three people near him at once bring about irregularity of movement. Under extreme excitement he is quite steady, and a glass of whiskey or a glass or two of wine puts an end to all his difficulties. Carrying any heavy parcel, like a valise, incapacitates him for a time from writing with steadiness. He adds that there are times when he feels a certain security that he will be able to write, and then writes with ease; whereas on other occasions, for a half hour or more at a time he cannot lift a cup, or perform any movement of a finer character, such as writing or drawing, without irregular movements, which if seen in a child would be considered as one of the forms of chorea which I long ago described as the chorea of intention or volition.

A careful examination of the psychical conditions brought out certain interesting additions to his statement. Thus, he confesses that he has at times a feeling of fear that if anything extraordinary happened he would not be able to defend himself against attack, or be competent under circumstances of difficulty. Also he has that other form of nervousness we sometimes see when sudden noises startle more than they should do. He adds that strenuous efforts to overcome his choreoid troubles generally end by making them worse.

It is commonplace knowledge among physicians that when a person complains of being nervous, it is necessary to ask for a definition. The replies are various. Commonly what a man calls nervousness expresses itself outwardly in some visible form of abrupt local or general muscular movement. The range of susceptibility is of course large, for even the most healthy, as we all know, may be caught off guard and disturbed for a moment by a sudden sound, as a door slamming or a log falling in the fire, and are somewhat at the mercy of the unexpected. Extreme conditions of this kind may be the outcome of ill health and of weakness from disease or wounds. In war the emotional nervousness of recruits about to come under fire, and indeed sometimes of old soldiers, was visible, as officers described it to me, in efforts of relief by shifting the feet, by buttoning and unbuttoning the coat, by chewing on a bit of wood or cracking the joints, or by disturbances of a more unpleasant character. In a few cases, as I saw, this tendency increased and at last became a condition of chronic instability which destroyed the man's usefulness as a soldier. These men ended by becoming valueless in war.

Nervousness in its various forms is one of many symptoms in the lesser neuroses, but sometimes in people apparently otherwise healthy is at times so predominant as to constitute by itself a condition which may be called general nervousness. It is difficult to defend this term, and yet it puts briefly a condition sufficiently easy to recognize. Intense self-consciousness is one stigma of these cases. It may be of such a nature as to bring about difficulties in regard to any habitual act done under attention, and is but a minor illustration of what many normal people experience before an audience or in some unusual environment where they have to act and have too much time to consider. As everyone knows, the preëxistence of a doubt as to a man's ability to do this or that may seriously affect results. This is seen in old age when a man, aware of his tremulous hand, becomes disturbingly self-conscious if overlooked by others and has then an increase of tremor, or perhaps something more positive, like the ataxic condition I have described. This very individual act of signature is most likely to be thus affected. I have known persons whom no one would describe as nervous who always disliked to be under observation while signing their names. In one instance, a man of great capacity and exceptional courage whom

I knew, had to write hundreds of signatures and always sedulously avoided being overlooked. He told me that observation disturbed him so as at times to affect the distinctness of his sign manual. Violent exercise made it worse, as it does in fact so affect all delicate muscular movements. Tobacco in excess made his peculiar difficulty more obvious. A glass or two of wine entirely abolished the trouble. I presume that with the sense of failing powers comes watchful self-consciousness, so that what is an almost automatic action becomes distinctly impaired by being a product of too attentive volition. Since this former case came under my eyes I have talked of it to a good many people, and have been surprised to find how many there are who dislike to be under observation when signing a name. Quite recently a physician who has this infirmity told me that if in a letter he expressed himself emotionally, his writing became, as he said, excursive and not merely tremulous.

Much more might be said of this interesting minor signal of the influence of emotion on muscular action, and on the effect of doubt as to efficiency thus acquired. Also the fact of alcohol at once giving steadiness and abolishing the trouble is, it seems to me, interesting, and has been within the experience of several persons. The effect of emotion in the nervous is familiar in the exaggeration of the knee jerk, and a similar overflow of energy may be responsible for the disturbance of certain normal, voluntary actions of muscle groups.

TUMOR OF THE FRONTAL SUBCORTEX AND CALLOSUM, WITH FLACCID PARALYSIS OF THE MUSCLES WHICH SUPPORT THE HEAD, APHONIA, MENTAL CHANGE, AND OTHER SYMPTOMS, ILLUSTRATED BY A CASE WITH NECROPSY<sup>1</sup>

BY CHARLES K. MILLS, M.D.

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TO THE PHILADELPHIA GENERAL HOSPITAL

(From the Department of Neurology of the University of Pennsylvania)

The following case is presented as a contribution to our knowledge of frontal, subcortical and callosal tumors:

*Well marked general symptoms of brain tumor—inability to hold the head erect—aphonia—paraparesis, unskilful and uncertain movements and late right hemiplegia—exaggerated reflexes on the right side—involuntary evacuations—mental change—hypæsthesia to pain and temperature—tumor involving the sub-cortex and frontal region of the left hemisphere and the callosum.*

The patient, J. B., fifty-two years old, a manufacturer, was in good health with the exception of headaches until about two years before coming under observation. He began to suffer with these headaches at irregular intervals, and later had attacks of dizziness, and much more rarely of sickness of the stomach. He kept a diary, entries in which made during the period between January 9, 1905, and April 26, 1906, showed that he suffered not only from headache and dizziness, but also from rarer spells of nausea, and at times he had sensations of numbness or tingling or some form of paresthesia on his right side, especially in his right upper extremity.

On July 6, 1906, twenty-nine days before the operation, he had a severe spell in which he complained of his head and of great dizziness and plunged or fell towards the right side, going down upon the floor, but not becoming absolutely unconscious. After this he became much worse as regards his headache and general feelings of discomfort. Four days later he was taken to the Long Branch Hospital.

<sup>1</sup>Read before a meeting of the Philadelphia Neurological Society, held November 27, 1908.

After his admission to the hospital he grew steadily worse although he had at times periods of moderate improvement with recrudescence of his old symptoms with additional severity. It was noted at the hospital that he tended at times to give way on the right or to fall in this direction, and that he stood and walked unsteadily as if both legs were somewhat weak.

When first examined by me at the hospital he was in bed, where he had been most of the time for some days, although he was taken out of bed daily and put on a chair. His evacuations were usually involuntary. His appearance of face was that of distress and confusion. He understood what was said to him when the matter presented was not too extended or complicated. He answered correctly various questions which were put to him, giving the names in succession of two sons when asked who they were, and also responding in other ways. His responses were always by "yes" or "no" or by one or two words only. He did not talk spontaneously and he did not appear to be able to form sentences of any length. The interne stated that a few days previously to the examination by me he had answered questions, using some short sentences correctly. His speech was not paretic or ataxic, but the little he said was spoken in a very low voice, or a whisper.

Examination of the eyes showed no paralysis of single or associated ocular movements, no ptosis, no difference in the pupils, which were of equal size and responded to light and to converging and diverging movements.

Examination for movements of the jaws and face showed no loss of power in the distribution of the fifth nerve, but drooping of the face on the right and slight impairment of volitional movements on this side. Both eyes could, however, be opened and shut. The patient could not be made to put out his tongue, although he moved it around inside of his mouth.

The right arm was paretic, the impairment of power seemingly being equally distributed throughout the extremity. The patient could, however, at this time use the hand and arm to some extent, as when stimulated to return a grip he grasped the hand of the examiner feebly. The left upper extremity was used with comparative freedom and force, both in response to grasp and other methods of examination, and also spontaneously. The left hand was frequently used to brush away flies, or the hand and arm were moved about in the restlessness and suffering of the patient.

The right lower extremity was distinctly paretic, the impairment of power here being also general, and was, on the whole, about as marked as in the upper extremity. He used the left leg freely but not with full vigor, moving it up and down restlessly and also drawing and pushing it downwards in response to efforts to call forth its use.



All the deep reflexes in the upper extremity of the right side were exaggerated as tested for the elbow and wrist jerks, and also for the knee jerks and the muscle jerks of the lower extremity. Foot clonus was marked and very persistent on the right. The Babinski sign was present, but elicited with difficulty, the plantar reflex response being so vigorous as to confuse the tarsal and the metatarso-phalangeal reflex. The Oppenheim and Gordon signs could be elicited.

Examining for touch, pain and temperature, the patient was moderately hypesthetic to pain and temperature in the right lower and upper extremities. Nothing could be made out as to touch. On account of the patient's mental condition and speech nothing as to topognosis or the senses of position and movement and stereognostic conception could be determined. All the reflexes and sensation were about normal in the left half of the body.

An ophthalmoscopic examination had been made by Dr. William K. Campbell, of Long Branch, who reported that it was difficult, owing to inability to get the patient to fix his eyes, to examine the discs carefully, but that the appearance showed some blurring but not a true optic neuritis.

It was noted that the head of the patient, who was held up and sat on the side of the bed during part of the examination, fell backwards, giving the appearance of a spasmodic retraction of the head. When lying down the appearance presented was also somewhat like this. Examination, however, showed that there was no spasticity of the muscles of the neck and that the head could be readily moved backwards and forwards and to either side by the hands of the examiner. After being thus moved it would again fall backward, the patient apparently not being able to hold it up. The tendency of the head to fall backward seemed to be due to loss of power in the muscles concerned in poising the head and in forward movements of the head.

An effort was made to determine whether or not hemianopsia existed, but without success.

The patient was reexamined on Monday, July 30, 1906, by the writer, in consultation with the physicians and surgeons to the hospital, and Dr. T. H. Weisenburg. The examination revealed the conditions previously determined, and above noted, with some modifications and additions. In the first place, the paralysis of the leg, arm and face of the right side, especially of the leg and arm, was decidedly more profound than at the examination of three days previous. The patient could not be induced to make any movement of these limbs, nor could he be made to grasp the hand of the examiner. The tests for sensation were repeated with the result of making it more positive that hypesthesia to pain and temperature was present on the right. The observations as to ocular movements and the reflexes were practically the same.

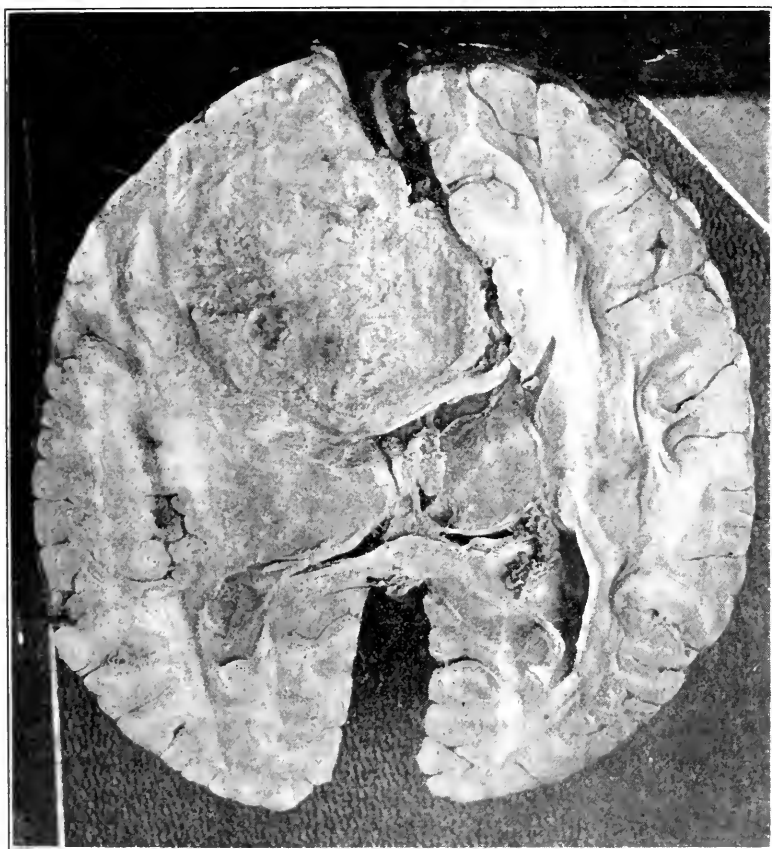
An ophthalmoscopic examination was made by both Dr. Campbell and Dr. Weisenburg. True choking of the discs was not present, but the discs showed blurring of their margins.

On one occasion, about a week before the examination, the patient had complained to his son about hearing some noises, asking the son whether he did not hear them. He apparently indicated the left ear by putting his hand to his ear, but as the right extremity was paretic this use of the left arm may have been due to impairment of power in the right. It was not quite clear whether or not these were real hallucinations.

As the result of the consultations it was decided to operate for decompression and exploratory purposes. Dr. Forman made a large osteoplastic flap, using the DeVilbus rongeur forceps, the opening being so planned as to be about two thirds in front and one third behind the central fissure. Its superior line was three and one fourth inches in length. The sides of the opening, about three inches in length, trended to a base line of about one and one half to two inches. Before and after the exposure of the dura the brain showed great tension as if a subcortical tumor might be present, but no growth was revealed by the exploration and it was deemed best to close the opening. The patient died within twenty-four hours after the surgical procedure.

At the necropsy which was performed by Dr. Weisenburg, the dura was somewhat adherent to the brain at the site of the operation. The superior, middle and inferior frontal convolutions were flattened and the fissures between them were almost obliterated. The orbital surface did not show any compression. Longitudinal sections of the brain made at various levels showed a large tumor which involved the interior of the left frontal lobe, compressing the right hemisphere as well as the left in a manner to be described. The tumor was soft in consistence, gelatinous in its structure, its border infiltrating into the surrounding brain tissue. It involved nearly the whole of the subcortex of the left frontal lobe. In its superior portion it was within one fourth of an inch of the cortex; anteriorly it was within one eighth to one fourth of an inch of the frontal tip; inferiorly it was within one half of an inch of the orbital surface, and laterally to within one half of an inch of the cortex. In the median portion in its widest area it projected to the right side, compressing the right frontal lobe, including the subcortex directly underneath the precentral convolution. Posteriorly the tumor compressed on the right side the caudate nucleus and to some extent the anterior limb of the internal capsule, but did not press upon the knee and posterior limb. It apparently here had made pressure upon some of the motor fibers coming from the precentral convolution. On the left side the tumor had compressed out of their proportionate relations the left caudate nucleus, the anterior limb of the internal capsule, the lenticula and the anterior portion of the thalamus.

The anterior limb of the internal capsule formed with the posterior limb a right angle and the posterior limb was considerably distorted. The tumor had obliterated the anterior horns of the lateral ventricles on both sides and extended as far back as the



Photograph of a section through the upper part of the basal ganglia.

anterior portion of the third ventricle which was not compressed. The tumor had destroyed entirely the anterior and middle portions of the callosum. In its widest portion it measured three and one fourth inches in width and two and one half inches antero-posteriorly, although it was probable that it extended further by infiltration than was shown by the macroscopic examination. It was a sarcoma.

Sections made of the pons and peduncle showed a slight

secondary degeneration of the pyramidal fibers of the left side.

The patient in this case had, in the first place, some of the well known symptoms of brain tumor, such as are usually present in a lesion of this description wherever situated. These were pain in the head, vertigo or dizziness, and a blurring of the optic discs which probably represented the beginning or the imminence of optic neuritis.

Among the most striking symptoms which seemed to be focal in character were the awkwardness or clumsiness of movement in the extremities of the right side of the body, which towards the termination of the case took the form of a hemiplegia; the weakness or paraparesis of both lower extremities, which was manifest before the right-sided hemiplegia became apparent; the aphonia or lowering of the voice; the tendency of the head to fall backwards, which was apparently due to a paresis or paralysis of some of the muscles concerned in holding the head erect, no spasticity being present; the involuntary evacuations from both bladder and bowels; and the mental apathy or feebleness. The deep reflexes in the right half of the body were exaggerated, and some hypesthesia to pain and temperature was present.

These symptoms are to be attributed in the first place to the large amount of destruction of the subcortex of the frontal lobe, and in the second place to the destruction of the knee and the anterior half of the callosum.

The hypesthesia to pain and temperature is probably to be referred to the involvement directly or by pressure of the subcortex of the gyrus fornicatus.

The exaggeration of the deep reflexes on the right side, including the Babinski sign and foot clonus, which were probably late symptoms, had for their pathological cause compression or direct implication of the pyramidal tract, the posterior extremity of the tumor having encroached somewhat upon the motor subcortex and having produced distortion of this portion of the brain and of the posterior limb of the internal capsule.

Such mental apathy, weakness, and disturbance as were present may be referred jointly to the involvement of the frontal lobe and the callosum. It is well known that psychic symptoms have often been observed in frontal and especially pre-frontal tumors, this being generally more marked when the neoplasm is situated in the left hemisphere. Mental symptoms have also been reported in some cases of callosal tumor.

The involuntary evacuations which were present for some days before the death of the patient furnished an interesting feature of the disease. In many cases of tumor of the brain the patients retain control over the bladder and bowels to a very late period, although this is not retained in other cases. The question of the position of the centers controlling these movements is interesting. Anal, vaginal and vesical centers have been placed in the paracentral lobule. The sphincters of the anus, bladder and vagina are doubtless controlled by cortical centers, the centers of one side being sufficient for this control. Destruction of the cortical centers of one side would not cause total paralysis of the sphincter muscles of the anus, bladder and vagina, whereas if these were destroyed on both sides this result would follow; and similarly it would be expected that destruction of the fibers going from these centers, or the commissural fibers connecting these centers through the callosum, would bring about this result.

To the writer the most interesting focal manifestation in this case was the tendency of the head to fall backwards, apparently because of paralysis or paresis of the muscles which hold the head in the erect position. This form of paralytic affection has, so far as I know, not been recorded. In another case recently observed and placed on record at the same meeting at which the present case was reported, a paralysis or extreme hypotonia of the muscles which support and poise the head was the feature of most interest, although the case in other particulars differed from that here presented and was probably an instance of cerebellar disease. In both of these cases no spasticity was present, but the reverse. The patient's head tended constantly to fall backwards, and apparently could not be supported in an erect position. Even when lying down this tendency was apparent and led to an examination being made for rigidity of the neck muscles, which however was absent; the head was easily movable in all directions by the hands of the observer, offering absolutely no resistance. It was clearly not a case of spasmodic retraction.

Whether the destruction of the callosal commissural fibers between the cerebral regions for the movements of the head and neck may not have had something to do with this symptom, is worthy of consideration. The head is carried erect and is poised in various positions through the interaction of a complicated bilateral musculature, all parts of which are probably governed

largely by centers in each hemisphere. Destruction of these centers on one side produces therefore no appreciable effect; destruction of them or of their subcortical connections on both sides might produce a marked bilateral paralytic effect, and by the same reasoning, destruction of the callosal commissural tracts might produce inability to use these muscles.

Mott and Schäfer, as cited by the writer in his book on "The Nervous System and Its Diseases," "experimented with weak induction currents on the callosums of monkeys, and produced localized bilateral movements in all parts of the body. From before backward, in order, in different segments of the callosum, electrical stimulation caused movements of the head and eyes, the face, the shoulder, the trunk muscles, and the legs and tail. Cutting away one hemisphere, they found that by stimulating a thin middle strip of the callosum localized movements were produced on the side of the section, that is, on the side of the body opposite to that hemisphere with which the callosum was still connected, the order of movements being the same as above mentioned." As the result of these experiments, it would seem that a large destructive lesion on one side of the cerebrum, involving the anterior part of the callosum and the adjoining portion of the other hemisphere, would cause more or less bilateral paralysis of the parts controlled by the centers whose commissural connections were destroyed. These connections in the case here recorded were probably those of the centers concerned with movements of the head. These centers, it is well known, are situated well forward in the motor region, in such position that the tumor found in this case would be likely to destroy both their projection and commissural tracts.

The aphonia or apparent aphonia may have been merely a late symptom indicating great weakness, or may have been dependent somewhat on destruction of the commissural connections between the laryngeal centers. The patient also had apparently some aphasia, but this aphasia seemed to be more than it really was because of his loss or great impairment of vocalizing power. One, two and three days before death he responded clearly to questions asked him by "yes" or "no," or made use of single words, or even short sentences, but it was always necessary to have the ear of the listener close to the face of the patient in order to understand what he said. The follow-

ing are some illustrations of conversation held in this way: When a watch was held before him, after looking at it intently, he said "watch" in a whisper or very low tone; other objects, as a pencil and key, immediately afterwards presented to him, he called also a watch in the same tone.

Several days before his death the patient became unable to stand or walk without support, this apparently being due to great clumsiness and weakness of the right half of the body, which became a hemiplegia shortly before death, and also perhaps to some extent to the much less degree of weakness of the left side. A species of paraparesis has been observed in some cases of callosal tumor. The hemiparesis or hemiataxia, or clumsiness of the limbs on the right side was doubtless due to the prefrontal and midfrontal disease, the late hemiplegia resulting from pressure and direct encroachment on the motor region.

I have reported this case as one of somewhat unusual character in that it presented at least two symptoms unique or almost unique, as well as other well-known manifestations of frontal, subcortical, and callosal tumors. The literature of callosal disease has recently been well presented by Bruns, who, including his own, collected twenty-six cases in which this structure was involved. In referring the clinical phenomena to the lesion found, most stress should of course be laid upon the frontal subcortical growth, this being very large, although the involvement of the callosum must also have recognition.

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## OPTIC NEURITIS ASSOCIATED WITH DISEASE OF THE SINUSES ACCESSORY TO THE NOSE<sup>1</sup>

BY S. D. RISLEY, M.D.

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A most important advance in our understanding of the etiology and nature of a considerable group of obscure ocular affections has been set forth during recent years, in a rapidly growing literature covering the border lines of three important and highly specialized fields in medicine and surgery, viz., neurology, oto-rhinology and ophthalmology. It is my purpose in presenting the following case histories to emphasize the relationship which may exist between certain forms of eye disease and affections of the bony sinuses in the anterior segment of the skull, contiguous to the orbits and accessory to the nasal fossæ; and furthermore to show that the accompanying symptom complex may suggest, even to the astute and experienced observer, serious intracranial disease.

Great liability to disease of the nasal fossæ and the accessory sinuses not infrequently results from congenital malformations in the anterior portion of the skull. The form of the orbits, the relation of parts in the nostrils, and in the contiguous sinuses are unquestionably modified by the distortions of the skull. It is not unusual to find a deflected bony septum in the nose and one or both middle turbinates tightly wedged between it and the outer bony wall. This limits the breathing space. In such persons, the slightest turgescence of the soft tissues effectually prevents the normal drainage from one or more of the accessory sinuses. Many clinical examples could be brought forward to demonstrate the signal importance of these congenital defects causing both ocular and rhinologic disturbance. We are all familiar with the distressing symptom-complex attending upon an acute coryza. For example inability to use the eyes comfortably, the increased lachrymation, the photophobia and frontal pain.

Ophthalmoscopic study of the fundus at such time shows a

<sup>1</sup> Presented by invitation to the Philadelphia Neurological Society, January 22, 1909.



marked hyperemia ; not infrequently a uniform fluffy appearance of the eye ground and a cherry red optic disc.

The picture is most suggestive of the possible pathologic ocular states which may arise when more or less permanent sinus disease exists, with the ever present tendency to acute exacerbations. In this connection the very intimate anatomic relations between the nasal fossæ and the accessory sinuses should be borne in mind. The mucous membrane lining the interior of the nose is continuous through narrow drainage canals with the "muco-periosteum" lining all of the sinuses. These bony walled cells are therefore likely to participate in the infectious diseases of the nasal membrane. When this occurs their anatomical situation is peculiarly unfortunate, since the closure of their ducts by inflammatory thickening of their lining membrane and by the turgescence and hypertrophy of the soft tissues in the nose effectually prevents normal drainage. The resulting pressure by the pent-up secretions is a frequent cause of headache and favors the extension of the disease to contiguous structures. To comprehend what may ensue we have but to recall the anatomic relations of the inflamed membrane lining the thin bony walls of these cavities to the important structures lying in contact, or in close contiguity. The danger to the integrity of the eye becomes apparent, especially in the case of the sphenoidal sinus with the chiasm and the optic nerves in such close proximity, the former resting upon its roof and the latter coursing along its paper-like walls to reach the optic foramen. In the case of the other sinuses one has but to study the thinness of their walls, the frequent lapses in their continuity; the network of sutures which in adult life unite the different centers of ossification; the numerous foramina for the passage of nerves, arteries, veins and lymph channels, to realize the opportunities which are afforded for the ready migration of infectious products to the orbital tissue.

Since the walls of these sinuses form so large a part of the walls of the orbit, reasoning *a priori*, it is not cause for surprise that the contents of the orbit are peculiarly liable to invasion, as has been so abundantly proven by comparatively recently published observations and clinical reports. It is, however, a cause for surprise that the frequency of its occurrence, and its serious significance in ocular affections was not sooner, and certainly more

generally recognized. It is true that we have not been unmindful of the fact that disease of the ethmoidal cells was the *fons et origo* of orbital abscess; that malignant disease of the maxillary sinus or of the ethmoidal cells was especially prone to invade the orbit, but I am convinced that, so far as the literature affords an indication, we have not appraised at its full value the responsible part played by affections of these cavities in the production of ocular discomfort and ocular disease.

More or less serious and obscure ocular disease has, I am sure, in some instances been ascribed erroneously to more remote causes; or a rebellious asthenopia, which would not be vanquished by the correction of an error of refraction or some muscular imbalance, has been laid at the door of neurasthenia, toxemias, or other causes when the real origin of the trouble was to be found in some affection of one or more of these bony walled cells. It may often be nothing more serious than pressure, *e. g.*, in a frontal sinus or the anterior ethmoidal cells due to a blocking or closure of the drainage outlet by a so-called "chronic cold in the head," which, when investigated, proved to be due to an acute swelling or a chronic hypertrophy of the nasal mucous membrane in the middle fossæ of the nasal chamber, or to some mild chronic sinusitis, probably the persisting result of some ante-dating infection.

The first case presented to illustrate the foregoing remarks is one of optic neuritis with great swelling of the papilla, lowered sharpness of vision and contracted fields, but the general symptom complex did not suggest intracranial origin. Events seem to have succeeded each other in the following order:

Firm blocking of the right upper nasal fossa by hypertrophy of the middle turbinate; purulent inflammation of the right frontal sinus; filtration into right maxillary antrum, necrosis and destruction of the floor of the frontal sinus, abscess of the orbit; proptosis of the eyeball; optic neuritis with reduction of vision to one fifth. Recovery through surgical procedure.<sup>2</sup>

Mr. M., age 47, consulted me August 5, 1903, for confusion of sight, and right hemicrania, which radiated from the mid-frontal region to the right ear and occiput. There was slight puffiness of the right upper eyelid, the ball was proptosed forward, downward and outward, but the field of forced fixation was but little disturbed, except upward where it was limited to the horizontal line. Deep palpation under the orbital rim revealed

<sup>2</sup> Vide Transactions of the American Ophthalmological Society, 1908.

only a soft fullness, leaving the impression of displaced orbital fat, but no nodular masses were discoverable. The movements of the left eye were normal, and both pupils reacted normally to light and shade. The field of vision was not impaired, there was no scotoma.  $V.=\frac{9}{7}-\frac{1}{2}$  in each eye. There was a low grade of hypermetropic astigmatism in both eyes. In the position of rest the proptosed ball was estimated as 1 cm. in front of its fellow, and the center of the pupil 8 mm. lower. On everting the upper lid, the retrotarsal fold came forward, and there was moderate chemosis of the conjunctiva. Firm pressure upon the ball through the closed lids reduced the exophthalmos, increased the periorbital pain, and caused a painful sense of fullness or pressure in the right nostril. The ophthalmoscope showed no change in the caliber of the blood vessels, but the disk was grayish-red, opaque, and its margin obscured, while the entire fundus was a fluffy, homogeneous dark red color. A study of the nostrils showed the left nearly normal, but the right was stuffed with polypoid masses, which bled freely. A portion of this tissue was removed, sent to the laboratory for examination, and reported as malignant, but a second examination did not confirm this opinion. Transillumination showed that both the frontal sinus and the maxillary antrum on the right side were blocked by opaque contents.

After consultation with Dr. G. E. deSchweinitz and Dr. B. A. Randall, it was decided to attempt the drainage of the frontal sinus and antrum through the nostril before adopting a more radical procedure. At my request Dr. Randall amputated the middle turbinate and enlarged the opening into the maxillary antrum. A canula was then introduced into each sinus daily, and large quantities, at first of semi-inspissated pus washed into the nostril. The proptosis of the eye-ball was greatly diminished by this procedure, and the pain became less severe, but both the pain and prominence of the ball recurred after any neglect of the troublesome and painful irrigation. After several weeks, vision sank to one fifth in the right eye, the optic nerve margins were entirely obscured, the veins were full, dark and tortuous and the summit could be seen with  $+4$  D.

He was then admitted to the Polyclinic Hospital, and assisted by Dr. Randall, the frontal sinus and anterior ethmoidal cells were freely opened through an incision under the orbital rim extending from a point under the middle of the eyebrow inward to the nasal bone, and downward along its border. On attempting to separate the periosteum the floor of the frontal sinus was found necrosed, and was curetted away.

There was a profuse gush of foul, purulent contents which was found to fill not only the entire sinus, but the orbit back of the eye-ball. The cavity after a painstaking removal of the diseased bone and granulation tissue, was carefully and thoroughly cleansed by irrigation with bichloride solution and diluted

peroxide of hydrogen, followed by warm physiologic salt solution. A drainage tube was inserted in the frontal sinus, and a second into the nostril from the inner angle of the incision, and the wound closed.

The pain and proptosis promptly disappeared, and convalescence progressed uninterruptedly. The neuritis slowly subsided and vision rose to normal. Notwithstanding the displacement of the trochlear attachment of the superior oblique during the operation, normal binocular balance was restored.

Up to the present time, there has been no relapse. Vision with correcting glass was six fifths in each eye, and there was no remaining signs of the optic neuritis. There was orthophoria. There was no visible scar remaining from the operation except at the point of emergence of the drainage tubes, and as this was under the nasal end of the brow, could be seen only when the head was tilted backward. This emphasizes an important point in the technique of the operation for opening the frontal sinus. The incision under the orbital rim gives equal if not readier access to the sinus, secures more favorable drainage, and does not result in the deforming scar so often seen when the operation has been made above the rim of the orbit.

That serious optic neuritis associated with a symptom complex suggesting intracranial disease may find its origin in an unsuspected sinusitis is demonstrated by the history of the following case:

CASE II.—Double optic neuritis; impaired central vision, contracted field; recovery after drainage of frontal and ethmoidal sinuses after duration of nearly three years.<sup>3</sup>

Thos. C., age 40, was sent to my clinic at the Wills Hospital, May 26, 1905, by his physician, Dr. Fetterolf. He had been suffering from insomnia and faulty vision, with frequent exacerbations of greatly increased but transient impairment of sight. At his first visit  $V. = \frac{6}{10}$  in the right eye and  $\frac{6}{6}$  in the left. The ophthalmoscope showed  $H. = 2$  D. at the fovea in each eye, but the papillæ were swollen, and the margins of the disks hidden by the infiltrated overlying tissues. There were numerous flame-shaped hemorrhages on each nerve and throughout the fundus. The summit of the nerve was  $+6$  in the right eye and  $+4$  in the left.

The fields of vision were concentrically contracted to approximately  $40^\circ$  but no scotoma could be demonstrated. The urine was normal. The man's mother had diabetes, but otherwise the family history was good. He had never had gonorrhea or syphilis. The patient was sent to Dr. Weisenburg, then consulting neurologist to the hospital, for consultation. After an elaborate and painstaking study, Dr. Weisenburg reported the neurologic examination as negative with the exception of a general increase in the tendon reflexes. There was "entire absence of foci:

<sup>3</sup> Vide Transactions of the American Ophthalmological Society, 1908.

symptoms, and of general pressure phenomena." But, nevertheless, he advised that the skull should be trephined because of the great swelling of the optic nerves, and for the reason that "a new growth might be present in the cranial cavity in a region such as would not give any definite focal symptoms."

The man would not consent to this, and the operation was not strongly urged. Even though there was no cause to suspect specific infection, large doses of potassium iodide, mixed treatment and mercurial inunctions to the point of commencing ptyalism were at different times persistently employed for many months with varying results. For a series of weeks the subjective symptoms would subside, the retinal hemorrhages absorb, and the swelling of the papillæ diminish, and a partial, or at times a nearly complete restoration of the fields of vision, so that on several occasions the man returned to his employment, the care of a stationary engine, only to suffer a recrudescence of the entire symptom complex. He had from the first complained of difficulty in breathing, especially at night, but on March 9, 1907, after a particularly bad and sleepless night, he came to my private office complaining of frontal pain. I then found a fresh crop of hemorrhages in the retina, and observed his great difficulty in breathing. The nostrils were then examined and both middle turbinates were found hypertrophied, and polypoid masses filling tightly the upper nasal space on both sides. The stiffening of the upper nasal fossæ was so complete as to effectually prevent all drainage from the accessory sinuses. I then amputated the middle turbinate on the right side, and two weeks later the same operation was performed on the left nostril. This was nearly two years after his first visit to the clinic, during which time he had been constantly under observation and treatment by his physicians, Dr. Fetterolf, Dr. Weisenburg and myself or my assistants.

The relief which followed these operations was phenomenal. The drainage from the frontal and ethmoidal cells was free, and at first profuse, consisting of a creamy white discharge. Irrigation was not adopted as it seemed unnecessary. The distress in the frontal region disappeared and he slept well. Vision rose to  $\frac{6}{8}$  in each eye, and on April 20th, one month after the operations, the fields of vision were normal, and have remained so to date of writing, January, 1909. The swelling of the papillæ has slowly diminished, notwithstanding his continuous occupation at his engine. At the present time the swelling of both papillæ has entirely disappeared, the fields of vision are normal, and the patient entirely comfortable. V. =  $\frac{6}{8}$  in each eye. The nerve margins are seen indistinctly through the long time infiltrated overlying tissue. There has been no return of the hemorrhages. I can now but feel that the long delay, two years, before a study of sinus conditions was made, is a just cause for self reproach.

CASE III.—Mr. D., age 58. A robust, healthy man consulted me December 12, 1905, for failing vision in the left eye. The right had been useless from childhood from amblyopia, due to convergent strabismus and high hypermetropic astigmatism. He had been told by an Italian surgeon many years before that restoration of vision was not to be hoped for. The opinion was doubtless based upon the theory of amblyopia from disuse. The left eye was then healthy and no treatment advised.

Examination showed the right eye not only amblyopic but totally blind from atrophy of the optic nerve. Left eye  $V. = \frac{6}{60}$ ; the field of vision concentrically contracted to  $30^\circ$ . The nerve was gray-red, opaque, and margins obscured. The central vessels of the retina were normal in size. He suffered from fronto-occipital pain and insomnia. He was much addicted to the pleasures of the table and suffered attacks of gout. Frequent examination of the urine showed absence of albumin, or sugar, but high specific gravity and excessive deposits of uric acid, urates, etc. Transillumination showed both frontal sinuses opaque and the upper nasal fossæ were stuffed with huge polypoid masses on both sides but the right nostril was completely blocked.

These were removed with the snare and their removal was followed by large quantities of yellowish, creamy discharge. Amputation of the middle turbinate was advised but the operation refused by Mr. D. Great relief followed the removal of the polypoid masses, however. After a few weeks' treatment of the nasal fossæ locally, and the administration of ascending doses of potassium iodide and strychnia, his frontal pain was much relieved, the sinus discharge diminished and vision in the left eye rose to  $\frac{6}{xv}$  on February 24, 1906. His business affairs then compelled his absence from the city until August, 1906, when he had an attack of rheumatism and a long spell of invalidism. In June, 1907, I found vision had sunk to  $\frac{1}{10}$  and the nostrils again stuffed with the polypoid growth. These were again removed, the nostrils treated for a few days, and he was not seen again until November, 1907. The veins and arteries were of normal caliber but had gray lines at their border near the nerve, which disappeared toward the periphery. The outer half of nerve was gray but not cupped and still capillary, but there was an absolute central scotoma and fixation was eccentric. Amputation of the turbinates was again advised but refused. Early in 1908 he went abroad for treatment and reported in December, 1908, that he had been under Prof. Pagenstecher's advice and treatment for five months without benefit and had then gone to the Roman baths. He was entirely blind in both eyes and both optic nerves atrophic. At his first visit, in 1905, I sent him to Dr. C. K. Mills for consultation but no positive evidence of intracranial or central nerve disease was discovered.

# THE SYMPTOM-COMPLEX OF CENTRAL NEURITIS

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It is only within recent years that central changes have been demonstrated in connection with peripheral lesions in polyneuritis. These observations have greatly widened our conception of the various toxic types of polyneuritis, and in these central changes there was found an explanation for the frequently associated mental condition, which had previously proved so perplexing. These cell changes are usually of some type of chromatolysis, with a disappearance of the Nissl granules and the neurofibrils, the type of change that is seen in the ventral horn cells of the spinal cord and medulla, when the axon is cut or destroyed. It is known therefore as the axonal reaction. Associated with this axonal cell change, there is a degeneration of the myelin sheaths, usually systematic in distribution and involving mainly the pyramidal tracts in the brain and spinal cord, and the columns of Goll and Burdach. The cells involved are principally the large and small motor cells of the cortex, the nuclei of the medulla, the cells of Clarke's column and the anterior horn cells. All of these cell and fiber changes can be demonstrated in the brain and cord in cases of peripheral neuritis, thus showing that the peripheral symptoms are merely one expression of a general toxic disorder. In some cases no central changes can be found in a peripheral neuritis, in others, these central changes are abundant. The points to which we wish to call particular attention in this paper, are those conditions in which the systemic degenerations are entirely of central distribution without any peripheral neuritis, and in which the clinical symptom-complex is so typical, that frequently an ante-mortem diagnosis can be correctly made. Many of these cases came to autopsy, as the disorder is purely a terminal one, arising mainly on the basis of certain toxic, cachetic or depressive disorders.

In 1901 Adolf Meyer and later I in 1906 called attention to this combined neurological and mental condition, the former as the end stage of certain depressive psychoses, the latter, as a hitherto undescribed form of alcoholic neuritis. Because of the purely central distribution of the cell and fiber changes without any sign of peripheral neuritis, the name central neuritis was proposed by Meyer for this symptom-complex. The name was retained by me in my alcoholic cases, as it expressed so admirably the neurological aspect of the affection. Anatomically there was more or less marked axonal reaction of the large motor cells of the brain and spinal cord, the nuclei of the medulla and of Goll and Burdach, with corresponding systemic degeneration of myelin sheaths of the pyramidal tracts, fillet and the posterior columns of the cord; chemically, cholin as a myelin degeneration product could be demonstrated in the cerebrospinal fluid and the nerve tissue itself, while the urine showed hyperindicanuria and sometimes acetonuria.

Briefly the clinical condition was characterized by diarrhea, emaciation, twitchings or rigidity of the extremities, some fever and some changes in the reflexes. The symptom-complex was purely a terminal episode. At first demonstrated as the end picture of certain depressive and cachectic disorders, I later found it to occur as a pure condition in certain alcoholic psychoses in which peripheral neuritis was absent. For this group of cases I proposed the name of alcoholic central neuritis, in contradistinction to the peripheral variety. However, since this axonal cell change has been found in other distinctly toxic states, it will be well to summarize the literature on the subject and attempt to correlate the anatomical findings with the clinical picture. A remarkable unity will be found to underlie this diverse etiology. As practically all the cases of central neuritis have occurred in emaciated and debilitated individuals, it will be of interest to first discuss the changes in the nervous system found in experimental inanition. Monti found that while the thin dendrites of the pyramidal cells vanished, the axis cylinders with their collaterals remained intact. Schaffer (3) found vacuolation, degeneration of the cell nucleus and some chromatolysis, the latter usually beginning around the nucleus. Hatai (4), in examining the brains of starved white rats, could find no alteration in the Nissl bodies. It will be observed that nothing resembling the axonal reaction could be demonstrated in these inanition experiments.



Sims (5) in two cases of acute polyneuritis with a typical mental disorder, one of the cases showing twitching of various muscle groups, found an axonal reaction in the cortex, anterior horn cells, Clarke's column, and the cranial nerve nuclei. Both Soukhanoff and Marinesco also found this axonal reaction in the motor cells of the cortex in cases of peripheral neuritis associated with mental symptoms. The same cell change has also been found in the end stages of dementia præcox, associated with emaciation and rigidity. Here it must be interpreted, not as the essential anatomical basis of the disease, as some observers have done, but as a purely secondary cell change, of terminal origin. The same cell alteration with central system degeneration has also been demonstrated in amaurotic family idiocy, and it is well known how frequently emaciation is an accompaniment of this disease. Bolton found the axonal reaction in the cells of the vagus nucleus in diphtheria. He appears, however, not to have examined for fiber degeneration by the Marchi reaction. Both Bikeles (6) and Thomas (7) demonstrated acute central degenerations in post-diphtheritic paralysis. The former found posterior column degeneration, especially marked near the posterior root entrance zone. Thomas found degeneration in the posterior columns of the cord, in the pons, superior cerebellar peduncle, formatio reticularis, cortex and pyramidal decussation. None of these cases showed any rigidity or twitchings, while the nerve cells were designated as normal. This lack of cell change is difficult of explanation, unless we assume that the nature of the toxic process on the myelin sheaths was so rapid that the nerve cells could not assume any characteristic change before death supervened.

There are certain other toxemias, due to poisons generated in the system or introduced from without, that may cause this axonal reaction. Tschernischeff (8) found, in two cases of fish poisoning with severe gastrointestinal symptoms and progressive weakness, but without any disorder of consciousness, a diffuse chromatolysis in the cells of the medulla, the vagus nucleus, pons, corpora quadrigemina and cortex. Nichols (9), in cases of typhoid fever and in experimental infection with the typhoid bacillus, found a typical axonal reaction in the motor cells of the spinal cord and of the posterior root ganglia. He believes that these changes are identical with those found in nerve cells after section, destruction or slight injury of the peripheral nerves.

More important, however, because accompanied by excellent clinical descriptions, are the investigations of E. Meyer (10) on the auto-intoxication psychoses. Here, not only was the axonal reaction marked and the changes in the cells bore a striking resemblance to those found by Bonhoeffer in delirium tremens, but the Marchi reaction showed distinct degeneration in the central convolutions and in the cerebellar worm. In an analysis of the cases, one important fact is noticeable, namely, that the axonal change or the fiber degeneration was found only in those cases which resembled clinically the picture of central neuritis. These cases showed emaciation, diarrhea, fever, rigidity, spasmodic movements and jerky tremor of the arms and legs, grimacing, mumbling speech, changes in the reflexes, and either confusion or delirium.

In Cole's (11) cases of alcoholic paralysis, there were muscular jerkings and rhythmical convulsive movements of the limbs. That these phenomena were of purely cortical origin and not attributable to peripheral neuritis is shown by the presence of the axonal reaction in all the cells of the spinal cord and the cortex, with degeneration of the pyramidal tracts, posterior columns, ponto-thalamic fibers, cerebellar tracts, etc. In the case of mental confusion reported by Ballet and Faure (12), the axonal reaction was found in nearly all the Betz cells, while clinically the cases showed many features of a central neuritis, such as muscular rigidity, emaciation, increasing weakness and sudden collapse. The authors interpret the condition as a kind of parenchymatous encephalitis.

Orr (13), in studying certain phases of the acute psychoses, found a general axonal reaction with central degenerations in cases of melancholia, acute delirium and depressive delirious states. One of the cases had stuporous episodes, another showed difficulty in swallowing and had twitching of the arms and legs. In an investigation of the nerve cells in thirty-three cases of insanity, Turner (14) found in five of these cases an axonal reaction of the Betz cells, the larger pyramids and the anterior horn cells, with degeneration of the posterior columns and the pyramidal and direct cerebellar tracts.

This axonal cell change has also been found in the cerebral cortex secondary to lesions of the internal capsule (Marinesco), in tetanus (Schupfer), in phosphorus poisoning (Rossi), acute

delirium (Carrier), in Landry's paralysis (Worcester), in delirium tremors (Bonhoeffer and Ewing), in pellagra intoxication (Righetti), and also in certain trypanosome infections, such as the sleeping sickness.

All of my cases were observed at the Worcester Insane Hospital. Only short summaries are given, but these present sufficient clinical, pathological and chemical detail to give a clear picture of the symptom-complex. The first four cases have already been published in full in my paper on mental disturbances of alcoholic neuritis.

CASE I.—Delirium tremens in a man of 55, of very acute onset. There rapidly supervened a slight peripheral neuritis, later deep confusion with twitchings, rigidity, tremor of the arms, double Babinski reflex, albuminuria, hematorporphyrinuria. The patient died a week after the onset of the above symptoms and although an autopsy could not be obtained, yet the clinical course seemed to justify the diagnosis of central neuritis.

CASE II.—Alcoholic depressive hallucinosis in a man of 42, with rapid emaciation, diarrhea, tremor, rigidity, twitchings. Death took place in two weeks from lobar pneumonia. Here again, although no autopsy was performed the clinical condition was that of central neuritis.

CASE III.—Alcoholic depressive hallucinosis in a man of 50, with marked episodes of fear, later emaciation and diarrhea, with rigidity, twitchings and disorders of the reflexes (exaggerated knee jerks, double Babinski). Hyperindicanuria was present. Death from broncho-pneumonia. There was an axonal reaction of nearly all the cells in the cortex and medulla, in the anterior horn cells, the cells of Clarke's column and the posterior root ganglia. Cholin was demonstrated in the cerebrospinal fluid.

CASE IV.—Alcoholic depressive hallucinosis, with episodic expansive ideas, emaciation, diarrhea, marked rigidity and explosive twitchings. Death from pulmonary tuberculosis. The above symptoms were observed for only four days before death. There was a general cortical atrophy, an axonal reaction of the cells in the frontal and paracentral regions, in the anterior horn cells and spinal ganglia. Cholin found in cerebrospinal fluid. None of the above alcoholic cases showed any of the tissue changes characteristic of general paralysis.

CASE V.—Melancholia in woman of 44, with anemia, agitation, depression, resistance, somatic delusions, later emaciation and diarrhea, increased muscular tension in the limbs, slight fever, severe rigidity of right fore-arm, tremor of chin and lips, dry seborrhea of feet, hands and face, exaggerated reflexes, right ankle clonus, no Babinski, unequal pupils, frequent jerking of

fingers of right hand. Albuminuria and hyperindicanuria. Death from broncho-pneumonia. The anatomical examination showed the axonal reaction in the small pyramids and Betz cells of both right and left paracentrals, in the first right and left frontal convolutions, medulla, anterior horn cells of the spinal cord and posterior root ganglia. There was a Marchi reaction of the motor fibers. The cells showed little pigmentation and only a moderate amount of swelling. Cholin was present in the cerebro-spinal fluid.

CASE VI.—Dementia præcox in a woman of 41. There were residuals of an old anterior poliomyelitis. The terminal episode was indolence, unproductiveness, a filthy dilapidated manner, diarrhea, emaciation, severe rigidity and general twitchings, exaggerated reflexes, fever, no leucocytosis. In the urine there was demonstrated acetone, diacetic acid, albumin and a large amount of indican. Death from broncho-pneumonia. The brain showed nothing gross. The right anterior horn of the cord was smaller than the left. Cholin was found in the blood and cerebro-spinal fluid. There were no toxic products found in the urine by the method of Stass-Otto (injection of the different portions into white rats) and no alkaloidal reactions in the different portions. In the first left frontal convolution, scarcely a cell with the granules in their normal stitochrome arrangement could be demonstrated. Nearly all the large and small pyramidal cells were in a state of axonal reaction. In the paracentrals all the pyramidal, particularly the large Betz cells, showed a severe axonal reaction. Some of these latter were pigmented.

CASE VII.—Senile depressive paranoic state in a man of 62. The terminal state was gangrene of the foot, toxic nephritis with waxy casts and hyperindicanuria, increasing weakness and emaciation, diarrhea, stuporous episodes, tremor of the arms, twitching of the fingers and lower arm muscles and rigidity of the arms and neck. Later the legs began to twitch and the expression became haggard and drawn. There was ptosis of the right eyelid, sluggish pupils, exaggerated knee jerks, no Babinski reflex. Death took place from lobar pneumonia. The autopsy disclosed a general arterio-sclerotic brain atrophy. Nearly all the pyramidal and Betz cells of the paracentral and frontal lobes, likewise the cells of the posterior spinal ganglia, showed an axonal reaction with only a moderate amount of swelling and pigmentation. In only a few cells was the arrangement of the granules normal. There was no cholin in the cerebro-spinal fluid or brain substance.

CASE VIII.—Dementia præcox in a woman of 40, with a persecutory hallucinosis, mutism, fear and marked perplexity. For a month previous to death there was almost continual diarrhea; later there developed explosive muscular twitchings of the face, neck and all the limbs. These twitchings were almost continual in character and were increased in intensity by any external

stimulus. There was rigidity and spasticity of the right leg, staring expression, fever, albuminuria and hyperindicanuria, exaggerated knee and Achilles jerks, ankle clonus and double Babinski. Death from lobar pneumonia. There was some atrophy of the frontal and temporal convolutions, while cholin was found in the brain and cerebro-spinal fluid. The pyramidal cells were in a state of axonal reaction, more marked on the right.

CASE IX.—Melancholia in a woman of 45, with stupor and resistiveness. For several days before death there were noted twitchings and marked rigidity. Death from pulmonary tuberculosis. Axonal reaction of the pyramidal and Betz cells of the frontal and paracentral regions, also in anterior horn cells. No cholin was found in the cerebro-spinal fluid.

CASE X.—Melancholia with marked depression, seclusiveness and suicidal attempts. Death from exhaustion. No rigidity or twitchings. Axonal reaction of the cortical cells.

CASE XI.—Carcinoma of the uterus with cachexia and emaciation. Axonal reaction of the cortical cells.

CASE XII.—Carcinoma of the uterus and rectum with emaciation and cachexia. No rigidity or twitchings. Axonal reaction.

CASE XIII.—Delirium with rigidity and twitchings. Axonal reaction.

CASE XIV.—Senile dementia with depression, emaciation, diarrhea and stuporous episodes. No rigidity or twitchings. Axonal reaction of the cortical cells.

CASE XV.—Alcoholic Korssakow's disease in a man of 43. Death after a rapid course, with rigidity, twitchings, severe diarrhea and rapid emaciation. Axonal reaction of the pyramidal and Betz cells.

CASE XVI.—Katatonia in a woman of 46. Protracted excitement, fainting attacks, marked loss in weight with progressive emaciation, diarrhea and increasing weakness. Normal pupils and reflexes, no tremor, twitchings or rigidity. The gross appearance of the brain was normal. About a third of the large pyramidal cells were in axonal reaction; some were greatly swollen.

CASE XVII.—Manic excitement with delirious episodes in a woman of 44. Later there developed emaciation, severe diarrhea, fever with moderate leucocytosis, continual mumbling and grimacing, difficulty in swallowing and a haggard expression. In addition there was extreme resistance and rigidity of the neck, arms and legs, tremor and twitching of the hands and exaggerated reflexes. The urine contained an abundance of indican and showed a positive diazo reaction, but there was no other evidence of typhoid fever. Death from chronic enteritis. No autopsy.

CASE XVIII.—Delirium in a middle aged woman, with auditory and visual hallucinations, frontal headache, staggering gait, vertigo, fever, rigidity of arms, spasmodic jerkings and finally Cheyne-Stokes respiration. Axonal reaction.

CASE XIX.—Delirium in a man of 44, with asymboly, marked confusion, rapid physical decay and progressive weakness, rigidity of limbs and slight twitchings of left hand, ptosis of left eyelid, death from lobar pneumonia and exhaustion. No autopsy.

CASE XX.—Dementia præcox in a woman of 33, with diarrhea, progressive weakness and during the last week before death jerky twitchings of the limbs. Death from pulmonary and intestinal tuberculosis. Axonal reaction of the Betz cells.

CASE XXI.—Dementia præcox in a woman of 25, with progressive loss in weight and severe diarrhea. Death from tubercular enteritis. Axonal reaction of the Betz cells.

CASE XXII.—Dementia præcox in a woman of 22, with stuporous and restless episodes, loss in weight, diarrhea, slight fever. Death from broncho-pneumonia. Axonal reaction of the pyramidal cells.

CASE XXIII.—Alcoholic depressive hallucinosis in a woman of 41, with restless and stuporous episodes, development of absurd somatic delusions. Later loss in weight, mutism and staring expression. About a month before death there developed marked rigidity of the right arm, the limb being held in a hemiplegic position, then general, paroxysmal twitchings of the body, exaggerated reflexes, fever and death from pulmonary tuberculosis. The Nissl specimens of the cord and brain (the frontal and paracentral region) showed a marked axonal reaction of all the cells with severe swelling. Many of the nuclei were filled with small vacuoles. With the Marchi stain there were a moderate number of blackened fibers in the corona radiata. Cholin was absent from the cerebro-spinal fluid.

An analysis of the material shows the following features. Out of twenty-three cases the symptom-complex was present six times in the alcoholic psychoses (one case of delirium tremens, one of Korssakow's disease, and four of the depressive hallucinatory type), three times in melancholia, five times in dementia præcox, twice in senile depression, twice in carcinoma of the uterus, three times in acute delirium and once in manic-depressive insanity. The prominent symptoms were loss in weight, emaciation, diarrhea, muscular rigidity and twitchings. The muscular rigidity was either confined to one group of muscles or comprised an entire limb, while the twitchings varied from a slight involvement of the fingers to the entire body, sometimes explosive in character, sometimes resembling a tetanic condition. A general restlessness and tremor of the arms was also a very frequent symptom. Fever was almost always present. Stuporous episodes and staggering occasionally occurred, also mumbling, grim-

acing and difficulty in swallowing. In four cases (V, VII, XIX, XXIII) there were focal symptoms, ptosis of the right eyelid and rigidity of the right arm. Death took place in most cases either from cachexia, pulmonary tuberculosis or lobar or bronchopneumonia. As a rule the reflexes were exaggerated. In several cases the pupils were unequal. Ankle clonus was observed twice, while the Babinski reflex was obtained three times. In nine cases in which an examination for cholin was made, the alkaloid was detected six times, a most convincing proof of the presence of myelin degeneration. In several cases there was a large increase of indican. Acetone and diacetic acid were detected once. In all the cases the axonal reaction was present in the brain and cord (frontal and paracentral regions, medulla, anterior horn cells, the cells of Clarke's column). None of the cases showed any of the tissue changes of dementia paralytica. In one case of depressive dementia paralytica resembling central neuritis (diarrhea, rigidity, twitchings and a lymphocytosis of the cerebro-spinal fluid) there was present a hemorrhagic pachymeningitis and histologically the cortex showed the typical tissue changes of the disease, but without any axonal reaction.

Since the symptom-complex of central neuritis is purely terminal in nature, occurring as the end-picture of certain cachetic, depressive or delirious states, recovery cannot take place. On the other hand, depressive psychoses with marked emaciation and diarrhea are frequently observed, in which neither clinically nor anatomically, can any central neuritis be demonstrated. What then are the conditions necessary for the production of central neuritis? A toxic etiology can easily be dismissed, as the presence of cholin and the findings in the urine are merely secondary. Furthermore, in one of our cases, a careful examination of the urine both chemically and physiologically, failed to demonstrate any poisonous products. The change in the nerve cells cannot be produced by inanition, for we have seen that under these conditions there is nothing resembling the axonal reaction. The symptom-complex can be fairly satisfactorily explained, however, by an application of Edinger's Ersatz-Theorie. For the maintenance of a perfect function of the nerve cell, it is necessary that the reparative power of the cell should be accurately balanced and adjusted. If the cell becomes unable to repair the

loss sustained by its functional activity, a progressive degeneration of the entire neurone follows. Mott has also pointed out how in neurones in a low state of nutritional equilibrium degeneration first begins in the fine collaterals and terminals and proceeds back to the cell of origin. Now in certain psychoses, the loss in weight, diarrhea and emaciation reduces the neurone to such a low state of nutrition that it absolutely destroys its reparative power. As a result the entire neurone degenerates and the peculiar symptom-complex of central neuritis follows.

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# Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

January 5, 1909

The President, DR. B. SACHS, in the Chair

## A CASE OF DISSOCIATED SENSORY DISTURBANCES

By R. H. CUNNINGHAM, M.D.

The patient was a woman, 54 years old, whose father died of old age. Her mother, after two paralytic strokes, was demented for ten years and died at the age of 74. This patient enjoyed good health up to the age of ten or twelve years, when she had an attack of typhoid fever. During the second or third week of this attack a paralysis of the right forearm and hand developed, and for several weeks following the attack the wasting of the affected muscles became very prominent. After several months, some of the paralyzed muscles began to improve, and continued to do so during the following two or three years. From that time until about one and a half or two years ago, the condition of the arm remained unchanged. For the past year or so the patient thought she could not use the hand quite as well as formerly and that it had become weaker, although its appearance had not perceptibly changed.

On examination there was found atrophic paralysis and paresis of the muscles of the right forearm and hand, with glossy skin and vasomotor dilatation in the skin of the hand. Both knee jerks were lively, the right much more so than the left. The right palpebral fissure was narrowed, and the eyeball retracted. The right pupil was smaller than the left and did not dilate as actively or widely as the left. Tactile sensibility was diminished along the inner side of the arm, forearm, palmar surface of the hand, and over the scapula below the spine. The pain sense was very much diminished along the inner side of the arm, forearm and hand. The temperature sense was practically lost over the scapula and the inner posterior and inner aspect of the arm, forearm and hand, excepting over the thumb, the index finger and the outer half of the middle finger.

This combination of atrophic paralysis and dissociated sensation evidently indicated that the patient had a unilateral lesion affecting the gray matter more or less profoundly in the lower part of the seventh cervical, the eighth cervical, the first dorsal, and the upper part of the second dorsal segments of the cord. If we carefully considered the history of this patient, it was very probable that during her attack of typhoid fever she developed a limited area of central myelitis, or a thrombosis of the terminal branches of several of the anterior spinal arteries, with subsequent destruction of the gray matter of one side of the cord. For about forty years this uncommon lesion had been dormant, although it was evident from what the patient said that certain non-progressive sensory disturbances had been continually present. During the past two years, however, she thought the whole arm was becoming weaker; hence, the

question arose, had a syringomyelia formed at the site of the old scar of the early acute lesion.

Dr. M. G. Schlapp said he had seen one case in which the cord lesion following typhoid fever proved to be a complete transverse myelomalacia involving two segments. The autopsy showed a thrombosis of the blood vessels, with resulting softening of the two segments of the cord.

Dr. Nathan E. Brill said that myelitis was a rare complication of typhoid; in fact the typhoid bacillus but rarely produced inflammatory or degenerative changes in the central nervous system. Rarely had a general or local poliomyelitis been recorded, though a few cases of either form were reported in literature. The common form of infection in typhoid was of the meninges, and in those cases the typhoid bacillus had been found in the cerebrospinal fluid. Even this was relatively rare. Neuritis of a peripheral nerve or nerve plexus and polyneuritis were also relatively uncommon.

In the case shown by Dr. Cunningham it was possible that there may have been a neuritis of some of the branches of the brachial plexus, and some years later some other involvement of the nervous system: a syringomyelia, if such be present in this case, may have been superimposed.

#### STUDIES ON THE PATHOLOGY OF POLIOMYELITIS ANTERIOR ACUTA BASED ON THE AUTOPSY FINDINGS IN FIVE CASES

By I. Strauss, M.D.

The author stated that from the picture of poliomyelitis acuta which he had presented, it was clear that the following conclusions might be drawn:

1. That there were both interstitial and parenchymatous lesions, but that the interstitial were of fundamental importance, and the latter secondary.
2. That the ganglion cells were affected only when in contact with the interstitial process.
3. That the interstitial process was dependent upon the vessels for its character and its localization.
4. That the lesion, while generally most marked in the anterior horns, was not confined to that portion of the gray matter, and hence the word "anterior" should not be used to designate the condition.
5. That the white matter of the cord was the seat of inflammatory changes of minor importance.
6. That the pial infiltration was an essential element in the disease, and might be the origin of the infective agent.
7. That the involvement of the medulla, pons and basal ganglia always occurred in the fatal cases, though clinical experience in the last epidemic had shown that such involvement did not mean a fatal issue necessarily.
8. That in striking contrast to the cord, the ganglion cells in the medulla, pons and basal ganglia, even when near infiltrated zones, escaped serious alteration.
9. That the brain cortex may show evidences of vascular irritation and sometimes infiltration.
10. That the edema which is present plays an important role in explaining the transitory nature of the symptoms in the non-fatal cases.
11. That the predominating role ascribed to the central artery by previous observers was unjustifiable.

12. That there was no evidence of thrombosis.
13. That apparently the infective agent might affect any part of the brain stem in its initial lesion.
14. That it could not be determined from a study of the pathological histology whether the infection had a hematogenous or lymphogenous origin.
15. That while the central nervous system was the seat of the principal lesion in poliomyelitis acuta, the changes in the internal organs of the body pointed to a general infection.
16. That the acute inflammation of the lymphatic apparatus connected with the interstitial tract might indicate the path of entrance of the infective agent.

Dr. Joseph Fraenkel said that Dr. Strauss's very complete report of the pathology of poliomyelitis acuta had helped him to understand some of the clinical features of the disease that had hitherto puzzled him. According to Dr. Strauss's paper, we were now told to look upon poliomyelitis as an inflammatory condition of the entire nervous system due to some obscure toxic agent, and that we should no longer regard it as a disease directly localized to the anterior horn. Accepting that interpretation, Dr. Fraenkel said he failed to understand why the final clinical phenomena of the disease were unquestionably referable to a lesion confined to the anterior horns and immediate vicinity.

Dr. J. Ramsay Hunt said that Dr. Strauss had enjoyed unusual opportunities in the pathological study of these five cases of acute anterior poliomyelitis. An interesting feature in the cases reported was the presence of inflammatory change not only in the gray matter of the cord, but also in the white substance and in the meninges, which was in harmony with recent pathological studies in a form of inflammatory reaction of the gray matter in the brain, namely, the acute polioencephalitis of Wernicke. More recent investigation of cases belonging to this type has shown evidences of inflammation not only in the gray substance around the aqueduct, but also disseminated in the white matter of the brain and brain-stem.

Dr. Hunt said he quite agreed with Dr. Strauss that perhaps most of the cases of so-called Landry's disease belonged to the same pathological type as the acute poliomyelitis, but he did not believe that all cases of so-called Landry's paralysis should be grouped under this head. There recently came under the speaker's observation a patient who presented a typical clinical picture of so-called Landry's paralysis. There was no disturbance of the functions of the bladder or rectum and no suggestion of sensory symptoms. In the muscles involved there was a complete abolition of all reflex action and no electrical response. The ascending paralysis gradually progressed, and death occurred in the course of eight days. At the autopsy, no definite changes could be found in the spinal cord or peripheral nerves. In a few segments of the anterior horn there was a suggestion of round-celled infiltration, one or two hemorrhages, but these were very insignificant. In such cases there must be a toxic condition which exerted its influence on the peripheral motor neurone.

Dr. I. Abrahamson said the cases which formed the basis of Dr. Strauss's report occurred during an epidemic of acute anterior poliomyelitis during which almost all the severe cases showed decided meningeal symptoms. The speaker said that in very many of the cases that came under his observation in the course of that epidemic he was able to elicit other than the usual symptoms which we were apt to ascribe to

an anterior poliomyelitis. Since then the sporadic cases he had seen again closely resembled our old conception of the disease, the meningeal symptoms retiring to the background of the clinical picture. The probabilities were that the cases occurring during an epidemic differed in their clinical features from the sporadic cases.

Dr. William M. Leszynsky said that during the last epidemic of acute anterior poliomyelitis he saw a large number of cases that could be hardly classified under that name as the disease was described and understood in former years, and the studies of Dr. Strauss indicated to his mind that the five cases reported could not be classified in that category. Otherwise, our present conception of acute anterior poliomyelitis had to be changed, and he was inclined to indorse the suggestion made by Dr. Strauss that the name of this disease be modified.

Dr. B. Onuf said that some time ago he presented a case to this Society which showed some interesting features, both anatomically and clinically. Anatomically, it showed the lesions of poliomyelitis, very similar to those described by Dr. Strauss. There were numerous foci of round-celled infiltration, which were chiefly found in the anterior horns, but also outside of them. Clinically, the case could be regarded as one of Landry's paralysis. The symptoms began in the lower extremities and then extended to the upper. Another interesting feature of the case was that symptoms of severe lead poisoning had directly preceded those of the Landry's paralysis.

Dr. Herman Schwarz said that during an epidemic we were apt to see variations and abortive forms of any particular disease, and this was so during the recent epidemic of acute poliomyelitis. While some of the cases observed at that time showed evidences of bulbar or meningeal involvement, there were many others that conformed very closely to our old-fashioned ideas of poliomyelitis. The speaker said he had seen one acute case since the epidemic in which there was meningeal irritation with resulting paralysis.

The President, Dr. Sachs, thought it was difficult to over-estimate the value of Dr. Strauss's communication on account of the early period after the onset of the disease at which the cases were examined, as well as the thoroughness of the studies that were made. They certainly gave us a better and more comprehensive understanding of the pathology of acute poliomyelitis; they showed that it was by no means the narrow disease, in an anatomical and clinical sense that we formerly regarded it, and in that respect they verified the findings of the special committee that had been appointed to study the disease during the last epidemic. Dr. Strauss's findings gave corroborative evidence that in acute poliomyelitis the entire central nervous system might be involved to a greater or less extent, and showed that the symptomatology of the disease would now have to be studied from a different point of view. It would be equally interesting, Dr. Sachs said, to learn the pathological conditions during the intermediate and terminal stages of the disease and to see what happened to these various foci. Did they disappear with the often remarkably rapid disappearance of the paralysis in many of these cases? Also, was the degeneration of the ganglion cells in direct relation to the interstitial disease? The toxin of the disease may have some independent effect on these ganglion cells, and it might not be exclusively an interstitial disease, as we believed. Dr. Sachs said he did not understand that Dr. Strauss had suggested that the name "poliomyelitis" be abolished; he only proposed to drop the term "anterior."

Dr. Strauss, in closing, replying to Dr. Fraenkel, said that the sensory symptoms, so far as they were observed, were irritative in character and could be explained either by the meningeal infiltration or the infiltration of the ganglion itself. Why the anterior horn lesion was the most prominent one, no one had been able to explain. It might be assumed that it was the point of greatest destruction because of its free supply of blood vessels and lymphatics. The speaker said he did not mean to propose substituting the name "infiltrating myelitis" for "poliomyelitis"; he simply said it belonged to the class of infiltrating myelitis. In answer to Dr. Abrahamson, the speaker said he agreed with Dr. Schwarz that during the last epidemic there were many cases of the classical type, and these abnormal ones would not have come into his hands for study had they not been of an abnormal type. There was no reason to suppose that with the old classical cases we might not have these symptoms of meningeal involvement, perhaps of a mild type, and which would clear up much more rapidly than they would in the severe cases.

#### A CASE OF SYRINGOMYELIA WITH NEURO-EPITHELIOMA, WITH SOME REMARKS ON THE ETIOLOGY OF SYRINGOMYELIA

By M. G. Schlapp, M.D.

The speaker reported a case which showed symptoms pointing to the presence of a tumor involving the first, second, third, fourth and partially the fifth posterior lumbar roots on the right side. There were also present slight symptoms pointing to pressure on the spinal cord. The diagnosis of extra-medullary tumor was made and an operation was recommended. Upon opening the spinal canal in the region of the first lumbar segment, and removing two or three arches of the vertebrae, no tumor was found. The patient, two weeks after the operation, developed a purulent meningitis which proved fatal a month later.

The autopsy showed an unusual condition. From the upper cervical segments down to the filum terminale was found a central gliosis. In the eleventh and twelfth dorsal and first lumbar segments there was found a neuro-epithelioma which involved the whole transection of the cord in those three segments. This tumor, according to the clinical symptoms present before the operation, could not have existed at that time; consequently, Dr. Schlapp thought that the tumor must have developed afterwards and in consequence of the operation.

In connection with the report of this case, the speaker considered the question of the etiology of the gliosis and the possible relationship between the gliosis and the neuro-epithelioma. He called attention to the fact that with the exception of one or two cases of neuro-epithelioma on record, all showed that the latter type of tumor developed very likely on the basis of a central gliosis.

Dr. Fraenkel said the sections shown by Dr. Schlapp—at least those that he had examined—showed a connection between the tumor formation and the central canal, and he asked whether all the sections showed such a connection. He also referred to Leyden's original conception, advanced many years ago, that syringomyelia was the result of localized sacculation of the central canal.

Dr. Hunt said the case reported by Dr. Schlapp showed that an exploratory operation for tumor of the cord has disadvantages quite apart from the possibility of infection that may follow. The speaker said he had at

present a case under his observation in which a trauma had apparently started the growth. The patient had been thrown to the ground by a passing wagon. Within ten or twelve days she developed a paresthesia in the left upper extremity, which gradually became more severe until she could no longer distinguish between hot and cold, and now, two months later, she presented definite symptoms of a central tumor of the spinal cord which was extending upwards.

Probably in most of these cases, Dr. Hunt said, there was some central gliosis or other defect which served as a basis for the growth.

Dr. Schlapp, in closing, in reply to Dr. Fraenkel, said that throughout the cord there were areas where the central canal was found to be obliterated. The gliosis, however, extended down the posterior septum and was not connected with the central canal. Cases had been recorded, the speaker said, where the cavity or gliosis was not connected in any part of the cord with the central canal. Dr. Schlapp said he did not look upon a gliosis as a tumor formation. In the case he reported he believed that the neuro-epithelioma had its origin in the trauma incident to the operation.

The following officers were elected for the ensuing year: President, Dr. J. Ramsay Hunt; first vice-president, Dr. B. Onuf; second vice-president, Dr. L. Pierce Clark; corresponding secretary, Dr. S. Ely Jelliffe; recording secretary and treasurer, Dr. Edwin G. Zabriskie.

## PHILADELPHIA NEUROLOGICAL SOCIETY

December 18, 1908

The Vice-President, DR. JOHN K. MITCHELL, in the Chair

### A CASE OF HEMATOMYELIA AND A CASE OF SYRINGOMYELIA

By Augustus A. Eshner, M.D.

Case 1. A woman, 25 years old, who had for two or three years rather constantly backache, was suddenly seized with severe pain in the lumbo-sacral region, lasting for three or four days, and followed by numbness and muscular weakness in the lower extremities, and for five weeks by loss of control of the sphincters. There was no loss of consciousness. While under treatment pneumonia developed, and this was followed by abscess of the left kidney requiring operation. During the course of this illness the patient sustained a burn in the hypogastric region, of which at the time she had no consciousness. Improvement gradually took place, and when the patient came under observation some eighteen months after the onset of her illness she still complained of loss of power and numbness in the lower extremities, with girdle sense about the level of the umbilicus. The gait was awkward and cautious, while station was a little uncertain. The knee-jerks were exaggerated, the right in slightly greater degree than the left. The ankle-jerks were active. Abortive ankle-clonus could be elicited on the left, while there was some rigidity at the right ankle-joint and overextension of the great toe of the right foot. The Babinski reflex was present on both sides. Tactile sensation was preserved everywhere, while recognition of the touching object and of heat and cold and of pain was absent on the trunk below the level of a line passing midway between the umbilicus and the ensiform cartilage

and on the extremities. There was no evident muscular wasting and no fascicular twitching. There was occasional active involuntary jerking of one part or another. The upper extremities were entirely uninvolved and there was no deformity of the spine. Micturition was deranged, there being at times difficulty in expulsion of urine and at other times deficient control. Eyesight, hearing, taste and smell were subjectively unimpaired. The eyes presented nothing abnormal. The pupils were equal, regular, reactive to light and in convergence and the media were clear and the fundi normal. Sexual desire was wanting, and there was occasional headache, but no nausea or vomiting. There was no other evidence of visceral disease. The patient had had measles and whooping-cough in childhood, but she knew of no difficulty in learning to walk, and she had been an average pupil at school and been able to participate in ordinary play. Menstruation had set in at 14 and was regular. The patient had had a stillborn child, but no miscarriage. There was no history or evidence of syphilis. The father was dead from an unknown cause, the mother from pneumonia. A brother was in good health, and a sister had died from gallstones. The patient was the second child and she knew of no difficulty in birth on the part either of herself or of other children in the family. There was no history of traumatism.

We have in this case the sensory dissociation phenomenon, together with other symptoms, of syringomyelia, but the history of sudden invasion and the subsequent improvement in the symptoms make it seem more likely that we have to do rather with a hemorrhage into the spinal cord, although it must be admitted there was no obvious predisposing cause for such an occurrence.

Case 2. A woman, 27 years old, who had been separated from her husband for two years, complained of loss of sensation in the entire right upper extremity, which felt as though it were wrapped in some substance. There was also some loss of sensation in the left upper extremity. The patient frequently burned herself about the right hand or arm without consciousness of the occurrence and the wounds were slow in healing. She related that some eight years previously, while slaking lime, she had burned her hands and was distinctly conscious of the resulting pain. Subsequently the hands were exposed to cold and later the loss of sensation was noted. The hands became swollen at times and the fingers were said to be shorter and thicker than they had been; the finger-nails were rough and thick and partly deformed, but some of these changes may have been due to the coarse manual labor the patient was compelled to perform. On examination tactile, painful and thermal sensibility appeared to be absent throughout the entire right upper extremity, although the patient would at times jerk the member abruptly when it was pricked sharply. Thermal sensibility was imperfect in the left upper extremity, but the other forms of sensibility were preserved here as elsewhere. The gait was somewhat awkward and the station slightly swaying when the eyes were closed. The knee-jerks were exaggerated. The soles of the feet were extremely sensitive to irritation, the slightest touch on the sole being quickly followed by sharp flexion of the foot and extension of the great toe. The sphincters were under perfect control, and the pupils exhibited no abnormality. There was no undue laughter or weeping and there was no history of shock, emotional or physical. Headache occurred occasionally, but other organic functions were well performed. The patient had had a number of the diseases of childhood, as well as smallpox at 6, cholera at 11 and erysipelas at 24. Menstruation had set in at 16

and was always regular and painless. She had given birth to a child that died at the age of four months without apparently having been ill. There had been no miscarriage. There was nothing in the family history having any bearing on the patient's illness.

While the total absence of sensibility of all forms in the right upper extremity suggests the possible presence of hysteria, the lack of tactile sense, especially when taken in connection with the exaggeration of the reflexes in the lower extremities, does not preclude the diagnosis of syringomyelia.

Dr. Mills said it is possible to have syringomyelia of traumatic origin but it is uncommon. Dr. Mills alluded to a case at the University Hospital which appeared to be of that nature, but it seemed to him that the case of Dr. Eshner could be explained on the theory of a hematomyelia, especially because of the suddenness.

#### A CASE OF PROGRESSIVE MUSCULAR ATROPHY WITH REMARKABLE IMPROVEMENT

By J. K. Mitchell, M.D.

The interest of the patient presented lies in two points—the diagnosis and the unusually good results of treatment. The history is briefly as follows: G. S., æt. 24 years, an automobile mechanic, has no points of interest in the personal or family history up to the beginning of the condition from which he now suffers, except scarlet fever in his ninth year, during which he is said to have had meningeal symptoms. Not long after some deformity or weakness of the left foot was noticed and an increasing symmetrical atrophy all over the body developed slowly from that time. At 18 years the little toe of the left foot was frost-bitten and had to be amputated, and, although it healed, an open ulcer afterwards developed and has never closed.

He has been at work until he came to the Orthopedic Hospital for treatment of this ulcer and was referred from the surgical clinic to the neurological service for care of his atrophic trouble.

He has, very distinct, general wasting, affecting all his muscles except those of the face. Sensation in all forms and everywhere is normal except on the toes, where it is slightly diminished to touch. The knee-jerk is lost, the skin reflexes are present, there are no abnormal reflexes. The atrophy of the foot muscles has resulted in a slight pes cavus and this, with his weakness, causes a swaying gait, but his station is perfect. He has no pain or tenderness anywhere. Electric examination of the muscles developed the interesting fact that there was no reaction of degeneration, but an evenly distributed quantitative reduction to both galvanism and faradism, not of very high degree.

The question of diagnosis is interesting here. At first polyneuritis seemed most likely in view of the history of infectious disease and of the legs having shown the earliest signs of trouble, as is usual in infectious polyneuritis. The continuation and slow spread of the trouble without pain, seem to render this improbable. The character of the onset, the subsequent history, and the electric contractility also exclude the possibility of chronic poliomyelitis. Nor can we think it amyotrophic lateral sclerosis in view of the absence of any involvement of the pyramidal tracts, usually found degenerated in that disorder. Simple weakness, widely disseminated progressive wasting, with loss of deep reflexes in the wasted parts, force on us the conclusion of progressive muscular atrophy.



Whatever the diagnosis, improvement to any great degree in any of the forms of neuritic or spinal atrophy after a duration of sixteen years, is unusual enough to be worth recording. S. weighed 92 pounds on admission to the Orthopedic Hospital in May, 1908. He has gained 18 pounds and this increase in weight is not fat but muscle. We have all seen patients with the various atrophies get fat in bed and lose strength at the same time, but this man has improved in activity and endurance. When he came to the hospital he could walk a few hundred feet with difficulty and fatigue, although he could do his work and move about a workshop. In October he had leave of absence from the hospital to see the "Founders' Week" celebration and announced with pride on his return that he had walked five miles without difficulty. All his muscles have increased in bulk and have lost the harsh, dry feeling they had when palpated at the time of his admission.

He was kept in bed at first with persistent massage and faradism and later was up and about the wards but had no coördination exercises, or, as we prefer to call them at the Orthopedic, "precision movements" until the past few weeks, so that his improvement is not merely that he uses his muscles more accurately, but is a real gain in power.

Dr. W. G. Spiller hesitated to accept the diagnosis of progressive spinal muscular atrophy, a disease in which the cells of the anterior horns are primarily involved, as the improvement was said to be so great. Sharp distinction must be made between primary and secondary changes of the anterior cornual cells, for while it is not uncommon to find alteration of these cells as a part of multiple neuritis, the alteration is of a different type from that of progressive spinal muscular atrophy or amyotrophic lateral sclerosis, and the prognosis of recovery is very different. The whole neurone is likely to be affected in a long-standing process, but we must continue to make distinctions between the cellular changes that occur from some cause directly affecting the cell body, and one affecting the distal end of the neurone. The prognosis of multiple neuritis is good as a rule, but the prognosis of spinal atrophy is grave. The microscope reveals also a very different type of cellular change in the two forms. It is the general opinion that when the anterior cornual cells are severely *primarily* degenerated they do not recover.

Dr. Spiller thought the case was probably one of motor neuritis, and he referred to a similar case with necropsy reported some thirteen years ago by Dejerine and Sottas.<sup>1</sup>

Dr. F. X. Dercum thought the really remarkable thing about the case was the degree of improvement following the atrophy, whatever its cause, whether the disease was limited to the spinal neurones or involves also their axones. The man had a distinctly steppage gait; he raised his feet and threw them forward as do cases of peripheral neuritis. The thought also suggested itself that possibly the case was one of primary neurotic atrophy, but Dr. Dercum thought that this diagnosis could be discarded because of the history. He thought Dr. Mitchell's inference that the weight had been due to actual gain in muscle correct, and that to him is remarkable. He asked Dr. Mitchell when treatment was begun in the case and how long it was carried out.

Dr. C. W. Burr said that it seemed very possible to him that the improvement in the man had been due to the education he had gotten, that is since he has been under Dr. Mitchell's care, the education in the

<sup>1</sup> Comptes rendus heb. des séances de la Soc. de Biol., 1896, p. 193.

use of what muscles he has. He had been taught precision in movement and certain gymnastic exercises, and it is certainly quite possible that while there had been no real anatomical improvement in his condition that he now can do things with his muscles that he could not do.

Dr. D. J. McCarthy thought the history of the case (the condition developing after scarlet fever) might throw some light on differentiating the condition from one of a progressive muscular atrophy, types of slow onset. Dr. McCarthy said he had had at different times two cases which have had some similarity to these present cases. The first was a case which he examined on two or three occasions, extending over a period of three or four weeks, and then the man went to Dr. Thomas, of Baltimore. After a stay at Johns Hopkins Hospital the symptoms cleared up entirely. The man was about 17 or 18. He was on an automobile trip to Atlantic City; it was a very hot day. He was very tired from perspiration, and the following day developed the condition for which Dr. McCarthy was consulted. He had no pain, simply muscular tremors. When Dr. McCarthy examined him he had the appearance of a case of muscular atrophy, marked loss of power in the four extremities, marked fibrillary tremor, affecting practically all the muscles of the four extremities. Dr. McCarthy saw him a week after the condition developed and the symptoms continued at first under Dr. Thomas's care, but later disappeared with some loss of power, but lack of evidence of progressive change in the muscles themselves. Of course, that case is not so remarkable as the one Dr. Mitchell presents. In that case there was no sensory disturbance. That case cleared up, or began to clear up, evidently within the period of time of regeneration of the ganglion cells; that is, in the period of twenty to thirty days.

The other case was a man of 40, who suffered from some type of infection. He worked at Point Breeze Oil Works; he was in bed three weeks with a fever and at the present time has a muscular atrophy which at the end of a year shows no improvement. It developed suddenly with fever, and presented all the clinical picture of a case of progressive muscular atrophy. At the present time he shows the symptoms of progressive muscular atrophy.

Dr. McCarthy thought these two cases were cases in which the condition was not isolated entirely to the anterior horn cells, but a subacute change which affects the entire peripheral neurone. When a partially degenerated nerve is put under conditions offering a chance for restitution there is no reason why restitution of function should not take place. In many of the organic conditions, more particularly in tabes, changes from the normal type of structure occur in the anterior horn cells, and restitution of function is possible, provided the cause is removed. Dr. McCarthy believes anyone who studies the nerve cells in a large number of cases comes across, not infrequently, partial loss of function or destruction, without complete loss of structure, and there is no reason why this partial degeneration, without complete loss of function, or complete loss of structure, should not exist for a long period of time.

Dr. J. K. Mitchell, in closing, said he thought that what Dr. McCarthy had said answered Dr. Spiller's objection. There seems to be a possibility in this case of three diagnoses, any one of which will serve our purpose as long as the patient is getting better, in which the symptoms do not differ very radically, the type symptoms being a little uncertain in all. The improvement reminds one of what we see in old poliomyelitis anterior. Patients come in, 20 or 25 years of age, who have had no

treatment since they had the disease when three or four years old, and it looks as if there was total paralysis. When you wake up these cases by treatment you find some muscles which after all were not involved but have only been neglected and are suffering because they have not been used. Electricity thoroughly applied, massage and proper feeding, brings them up. Whether it is a question of muscles, or whether it is a question of getting the best out of partially injured or little injured cells in the cord, is also to be considered and one simply cannot tell unless we have a post mortem both before and after diagnosis.

As to the question of treatment, the man has been under treatment since the first of June, when he was put to bed and kept entirely at rest, the theory being that the remaining nerve cells in the cord were overburdened like an electric wire already overloaded and asked to carry more current, with, as a consequence, chronic exhaustion, so that rest, not for the muscles, but for the overtaken nerve cells, was the thing that was going to help in the first place and then afterward we could proceed with more active treatment. In muscles in which there seemed almost no substance left we could get a normal reaction, though very much reduced, but not a reaction of degeneration. Faradism was kept up steadily and the quantity and quality of reaction distinctly improved. After two or three months of this when he began to go about, he was put on exercises of precision. It should be noted that the man was working until the time of his coming into the hospital as an automobile mechanic, therefore he was getting plenty of ordinary exercise, and was able to make use of his muscles, though less well than now.

Dr. C. K. Mills presented a patient and made some remarks on the differential diagnosis of grave hysteria and organic disease of the brain and spinal cord, especially disease of the parietal lobe. (*To be published in this journal.*)

Dr. Dercum thought the Babinski reaction undoubtedly present; it was not the pronounced Babinski that we see in the typical organic case, but it was none the less present. He regarded the case as organic. There were no hysterical stigmata and not even the man's mental attitude was one of hysteria. In multiple cerebro-spinal sclerosis, it is not uncommon for sudden attacks, suggesting apoplectiform attacks to be present early in the history; it is not infrequent also to receive a history of early improvement or such a case may suggest a functional disease at first but which later on proves to be organic.

Dr. Mills queried whether it might not be a case in the early stage of paresis.

Dr. Dercum replied it was perfectly possible, and asked whether Dr. Mills had elicited a history of syphilis.

Dr. Mills replied that he thought the man had syphilis.

Dr. Dercum said perhaps it was paresis in the early stage. He did not, however, have that slight mental obtuseness, that slight mental haze present even early and which is indicative of an active and close contact with the outside world. The patient seemed quite alive and alert in his responses.

Dr. Burr said that from the superficial examination he was able to make of the man's mental state he was inclined to think that the patient might be a case of beginning paresis. In paresis it is not very infrequent for patients to be somewhat hysterical in manner.

Dr. McCarthy thought the discussion ought not to be closed without saying a word as to the Babinski sign. There was extension of the toes.

There was flexion of the toes on deep irritation and then the quick response on slight irritation to which there seemed some objection. While it is perfectly true in the Babinski sign there is a slow response, in others there is a quick response which is quite as positive as if it were deliberate and slow. Dr. McCarthy thought the great value of the Gordon phenomenon is in the cases where you are in doubt as to whether you are dealing with the Babinski sign or not. That is where he has found Oppenheim's and Gordon's sign to be of value. Where these phenomena are absolute and positive, then he considered them to be in favor of a Babinski reflex.

Dr. Eshner said that it is a common observation that patients suffering from multiple sclerosis often exhibit a certain optimism, cheerfulness and hopefulness even while the symptoms and physical signs are growing progressively worse.

## TWO CASES OF ASTASIA-ABASIA

By F. X. Dercum, M.D.

The histories are in abstract as follows:

CASE I.—A. M., age 19, unmarried; family history negative; personal history negative save an attack of measles at two years of age, which was followed by weakness of both legs, persisting for six months. Two years ago patient suffered from an attack of typhoid fever which confined her to bed for four weeks. For fifteen weeks following she could not stand upon her feet. Subsequently she began to walk with a staggering, swinging gait which slightly improved. A severe fright caused a sudden recrudescence of the symptoms and also brought on hysterical crises.

*Present Condition.*—Is well nourished but rather obese. Has a high color. Exposed to the air, the skin over the chest assumes a mottled pink-and-white appearance. Dermography also is marked. Examination discloses markedly impaired station and very ataxic gait. There is no paralysis and no atrophy. Reflexes present no anomalies save that both knee-jerks are plus. The general visceral examination is negative. There are no sensory losses. There are, however, typical areas of painful hyperesthesia under the left breast, and over both groins and over the mid-scapular and lumbar spines and over the sacral and coccygeal regions.

Examination of the eyes reveals no abnormalities save that the fields are slightly contracted and sharply indented for red and that the color fields are at places reversed.

The gait which is the most striking symptom presented by the patient presents the following peculiarities.

The patient cannot rise steadily from the sitting posture. When finally she gets on her feet, she is able to walk, but her gait is slow, labored and absolutely unique. One side of the pelvis is swung forward, and with it the leg. The body lurches forward and after swaying for twenty to thirty seconds, she balances herself on the leg. The body is bent forward and the eyes are fixed to the ground. It seems that in her oscillations she would surely fall. The opposite leg is now brought alongside the first and again the body sways. The feet are planted rather widely apart and as she stands the weight is pivoted on the heels, while the balls of the feet rise and fall alternately from the ground. The oscillations of her trunk, both as she stands and as she attempts to walk strongly resemble the titubation seen in cerebellar disease.

CASE II.—M. C., woman, age 28, unmarried. Family history negative

save for "nervousness" on her mother's side. Personal history unimportant save that she was delicate as a child. At fifteen years of age, suddenly lost the use of her left arm and left leg. Was for a time unable to walk. She was compelled to remain in bed and also lost her voice. Subsequently complete recovery ensued.

Present trouble began with loss of voice in November, 1906, which persisted until May, 1908. At this time she recovered her voice but became unable to walk because of paralysis of the left leg.

*Present Condition.*—Examination discloses areas of painful hysterical hyperesthesia over the spine, over the inframammary and over the inguinal regions. No palsies or atrophies or other evidences of organic disease.

Examination of the eyes negative.

*Gait.*—When asked to walk, patient sways for a few minutes and then puts her right foot forward. When about to bear the weight on the right leg, it flexes at the knee and the patient appears as if she were going to fall on the right side of the body; but with the same ease as she appears to fall she regains her erect position and repeats the same step. She states that she can walk a considerable distance with this awkward gait. Patient states that it is the left leg that is paralyzed but yet curiously it is the right leg which gives way and upon which she falls. She puts the left foot forward quite readily and bears her weight upon it, evidently without the least trouble.

## ASSOCIATION AND REENFORCEMENT IN APHASIA

By F. X. Dercum, M.D.

Dr. Dercum briefly presented a patient suffering from pseudo-bulbar palsy and several patients suffering from aphasia. He called attention first to the very close relation existing between the anarthria of pseudo-bulbar palsy and the anarthria in motor aphasia. Secondly to the emotional reaction noted in the case of pseudo-bulbar palsy, namely, a tendency to laugh and a similar tendency to laugh in one of the motor aphasias. He then called attention to the intellectual deficit presented by the aphasics. First the general intellectual deficit as exhibited by the aphasics in their inability to carry out consecutively a series of instructions, this failure depending in part upon weakness of memory, impairment of judgment and especially upon impairment of association. Secondly he pointed out that the special intellectual deficit of the aphasics, namely, the failure of the power to comprehend language, is largely dependent upon a defect of the power of association, that is, the power of combination of the auditory impressions, in such a way as to give rise to the conception of the object named. The impairment in the power of association is often revealed in other ways than by the tests of Marie, as by the inability to recognize the qualities of an object, these qualities being named separately. The qualities may be such as are perceived by the sense of sight or such as are perceived by the sense of touch, but are habitually and intimately associated with articulate sounds, *i. e.*, words. The simplest tests are those made by touch and sight association. In tests so made, it is noted that the percentage of failures on the part of the patient is very great, the man having lost the power of associating the qualities of the object when these are communicated by sound, so as to form a conception of the object. In keeping with this it is noted in proportion as the aphasia is pronounced, adjectives and adjective phrases indicating qualities and prepositions indicating relations of one object to

another and verbs conveying relations of time and for that matter of space, are imperfectly if at all comprehended. Distinctions of tense are almost always lost even in mild aphasics.

Phenomena of reinforcement may occasionally be demonstrated, as is well known when impressions are made simultaneously upon a number of sensations so that by a combination of many qualities, a recognition of an object may be brought about. Reinforcement is often witnessed also as a result of excitement and often occurs spontaneously during the examination. For instance, in an aphasic whose language is limited to the word "yes," imperfectly pronounced, and when repeatedly urged to say "no" failed, until finally his face flushed, and shaking his head violently, he cried out, "I can't say no," enunciating the words quite distinctly. Reinforcement is manifested in other ways; sometimes words and phrases are uttered in the course of an examination, an interval having elapsed after the patient has been urged to name an object or pronounce a word. The instance of singing aphasics is also to be explained on the ground of reinforcement. It is also noted in aphasics who can count well in series; that is, when once started, from one on, that they frequently cannot name a number independently or separately.

Dr. Mills said in a paper which he had published several years ago on "The Treatment of Aphasia by Training" and in connection with which Dr. Weisenburg assisted Dr. Mills in the training of one or two patients, he called attention to one phase of the subject which Dr. Dercum had emphasized to-night regarding the peculiar manner not only in which language was broken up, but also in which it was regained. In this paper he called attention to both the loss and recovery of different parts of speech—prepositions, conjunctions, adjectives, participles, adverbs, nouns and verbs. He found in some cases that such auxiliary verbs as "is" and "was" especially were often to the patient as if they had never existed. The way of putting the question of intellectual deficit as presented by Marie, he thought misleading. It was presented to us as if it were something new and different from the views held by those who believed in the classical idea of aphasia. Of course, there is intellectual deficit in aphasia, a deficit which depends upon the destruction of what we choose to call centers and of the association tracts between these centers and between them and other parts of the brain. It is a deficit which is distinctly related to the impairment of cerebral speech or language. Much has been done by Marie, Dercum and others in adding to our knowledge of details in the discussion of aphasia. It seemed to Dr. Mills that the aphasic in his misunderstanding of what is said to him might in a sense be compared to a deaf man or partially deaf man in his misunderstanding of what is said to him, although the comparison cannot be carried too far. The higher psychic functions of the aphasic are not affected except in so far as these are cut off from the visual, auditory, motor and other speech centers. The intellectual deficit, while it may exist, is often not as great as it appears to be.

Dr. Dercum said he could not agree with Dr. Mills. Dr. Mills's comparison of an aphasic to a deaf person seemed unfortunate. The deficit is a psychic deficit, not a physical deficit. The mental impairment is both general and special. The special mental impairment consists of the failure to recognize words as indicating definite things or qualities. Further, the failure to associate articulate sounds properly so that neither adequate conceptions of objects named nor of their relations to each other can be formed, is certainly a psychic impairment.

Dr. Mills said he fully believed that.

Dr. S. D. Ingham reported two cases of encephalitis with necropsy (to be published in this journal).

## TUMORS OF THE LATERAL AND THIRD VENTRICLES

By T. H. Weisenburg, M.D., and W. F. Guilfoyle, M.D.

So far as known by the writers the proper diagnosis of tumors of the lateral and third ventricles has not been made in life. This is because of the variance of the size of the tumor and the fact that there can be no specific symptoms with the exception of those which result from pressure. The two cases reported are as follows:

CASE I.—A girl of 20 with a history of rheumatism began to gradually lose vision. This was accompanied by flashes of light and double vision. Very soon afterwards, she complained of headache which was occipital and frontal, nausea, vomiting and dizziness. She had several convulsions which involved the left limbs, especially the left arm, and during which time the arms and head were deviated to the right. Soon afterwards she began to complain of pains all over her body and especially of flushes of heat and prickly sensation in the legs, shoulders and back, and later on of the left arm. These symptoms increased in severity. The vision became completely lost, choked disc developed on both sides and this was later followed by optic atrophy. Mercurial inunctions were of no value. About two months after the beginning of her symptoms, she developed a slight ptosis of both eyeballs, more of the right. About five months after the beginning of the symptoms the pupils were unequal, of normal size, and the reactions to light and movement were lost. There was a marked exophthalmos of both eyeballs, more on the right. Both upper lids drooped. The axis of the eyeballs was directed downwards on an angle of  $45^{\circ}$ . There was complete paralysis of associated ocular movement upwards, less to the right, still less to the left, and less so downwards. Convergence was lost in all directions, excepting in a downward median direction, and in this only an attempt was noticeable. The right motor fifth nerve was paretic throughout. The lower portion of the right seventh nerve seemed weak. Taste was lost on the right side of the tongue, and smell was perverted. Hearing tests were unsatisfactory. The upper and lower limbs were weak, and the left limbs somewhat ataxic, although this was never satisfactorily demonstrated. Later in the disease, the left limbs, especially the upper became distinctly weak. Sensation at no time was disturbed anywhere over the body. Incontinence of urine and feces developed. The mentality of the patient gradually became worse. The pains and flushes of heat were constantly complained of and erythematous and acneiform eruptions which were not persistent appeared. Hallucinations of sight and hearing developed, and the ocular symptoms persisted to the end. There was no difficulty at any time in talking and swallowing, but she would at times yell without provocation.

At necropsy a large tumor was found occupying the whole of the left lateral ventricle and compressing the caudate and lenticular nuclei, the optic thalamus and the internal capsule.

CASE II.—A girl of 17 with an excellent family and past history and with no previous history of any disease, had stoppage of her menstruation. She then began to complain of weekly frontal headaches which were not very persistent but which three months afterwards began to be severe, lasting all day and were more marked on the right side of the head and

neck. Because of its severity the patient inclined her head to the right, this position making the pain easier. Coincidentally she complained of sickness in her stomach with a tendency to vomit. Seven months after the beginning of the symptoms she complained, in addition, of dizziness and of staggering which was more marked to the left. About this time her sight began to become poor and she began to see double. There was no disturbance of hearing.

When examined about six months after the beginning of her symptoms, she had choked disc of four diopters, paralysis of the left external rectus, some weakness in upward associated movement, this being manifested in a sort of cork-screw nystagmoid movement, motor weakness of the left side, and loss of all tendon reflexes with the exception of a faint response of the left biceps. Sensation was normal. Both upper and lower limbs were ataxic, more marked on the left, and the gait was distinctly cerebellar, more marked to the left. The diagnosis was made of a left cerebellar tumor.

At necropsy a large tumor was found occupying the whole of the third ventricle, about the size of a hen's egg, compressing on either side the optic thalamus and in its downward growth involving the nuclei of both third nerves, separating them and to a slight extent compressing the posterior longitudinal bundles in the upper portion of the pons.

In the first case a diagnosis was made of a tumor in the upper portion of the pons, this being based principally upon the paralysis of upward associated ocular movement and the loss of power of the right motor fifth. In the second case the symptoms were distinctly cerebellar and a tumor of the third ventricle was not suspected. In view of these two cases, tumors of the third ventricle should be suspected whenever there occur the general symptoms of brain tumor, indefinite motor weakness, cerebellar ataxia, various cranial nerve palsies and principally paralysis of upward associated ocular movement.

Dr. Guilfoyle stated that the patient lost her position as clerk in a department store because she would write crooked, that is, instead of writing along a line, she would write at right angles. This perpendicular writing is something Dr. Guilfoyle could not find any explanation for.

## CHICAGO NEUROLOGICAL SOCIETY

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The President, DR. RICHARD DEWEY, in the Chair

### TUMOR IN THE LEFT CEREBELLO-PONTILE ANGLE

By Julius Grinker, M.D.

CASE I.—X. F., male, clerk; first consulted Dr. Grinker on December 28, 1905. Well nourished young man of 24, with negative family and personal history, excepting that he was always considered somewhat nervous, having suffered from night-terrors when a child, and would appear dazed upon first awaking in the morning. His habits have always been good and he never had syphilis.

Last August he noticed that his left leg became weak and somewhat later, his left arm. The face was not affected. The following month (September) he had occasional headaches which were never severe, always diurnal, and localized over the right frontal region and in the nape of



the neck; they were always aggravated by violent physical exercise. Attacks of dizziness occurred upon suddenly rising from the recumbent posture, but these were of short duration. At about the same time his vision had begun to fail, his eyes became blurred, attacks of blindness would occur which on passing off would leave black spots in front of his eyes. These attacks were also accompanied by some dizziness. There was neither nausea nor vomiting at any time. He noticed peculiar jerking and twitching of his chest muscles at times. Quite recently symptoms of fatigue occur after the slightest exertion and even after awaking in the morning. One month ago (November, 1905) his vision had become much worse and he began to stagger, but mostly to the left. He consulted two ophthalmologists who informed him that there was "choked disc," and one of them even suggested that a neurologist be consulted. Dr. Greenbaum, who had charge of the case, took the patient to a neurologist, but did not agree with him on the diagnosis. By the courtesy of Dr. Greenbaum the patient came under Dr. Grinker's observation three weeks later.

*Examination* revealed a well nourished young man with uncertain gait, which could be characterized as slightly ataxic, with a tendency to reel towards the left. The left knee-jerk was greatly exaggerated, more than the right. Achilles jerks were lively; there was no ankle clonus, nor Babinski sign. Hand grasp was weak on the left side and the left leg showed corresponding weakness. With the finger-to-nose test a marked tremor developed in the left hand, which was more of an ataxic than an intention tremor, but partook of the characteristics of both. Babinski's adiadocokinesia sign could not be elicited, neither was nystagmus found, but slight horizontal nystagmoid movements were brought out when patient looked to the extreme right or left. Slight dynamic and static ataxia were present in the lower extremities, more marked on the left side. The left half of the face was not paralyzed, but seemed to be relaxed in its lowest portion. At this time no trigeminal involvement was discovered. At a subsequent examination which was made two months later the left trigeminal was found to be involved in its entirety and the existence of corneal areflexia was noted. Patient never complained of trouble in hearing and there was no history of ear disease. Dr. Grinker discovered complete nerve deafness in the left ear, of which the patient knew nothing until informed by him, consequently he could not say when his hearing had become defective.

The just described signs and symptoms enabled Dr. Grinker to make the diagnosis of tumor and to localize the same in the left cerebello-pontile angle, as probably originating from the acoustic nerve. Immediate operation was recommended in order to save what was left of the patient's vision. Dr. Greenbaum then arranged to have patient operated on by a competent surgeon, who failed to find the tumor. The same operator trephined two weeks later in order to do a ventricular tapping, but no fluid was discovered.

About a week later another surgeon operated over the left cerebellum, but did not find the tumor. The same surgeon performed a Cushing decompression operation on the patient with no relief to the patient. Meanwhile the blindness had become absolute. After recovery from the operation the doctor prevailed upon his patient to seek a third surgeon with a view of discovering and removing the elusive tumor. The last surgeon discovered a fibroma in the left cerebello-pontile angle, which seemed to have originated in the sheath of the left acoustic. The boy

still presents a number of signs of cerebellar disease, also a hernia over the left cerebellum and over the right parieto-temporal region. His general health is good, but vision is lost.

CASE II.—Miss D. F., aged 26, bookkeeper, with good family and unimportant personal history, consulted Dr. Grinker in July, 1905, for "nervousness." One year previous she had experienced more or less constant ringing in the left ear, which gradually subsided when complete deafness had appeared. Several weeks before Dr. Grinker saw her she began to have attacks of transient blindness in the left eye which occurred often when she was recumbent. She continued at her work, but this became more difficult on account of attacks of cloudy vision, as though mists arose in front of her eyes; these attacks were infrequent and were of momentary duration. In addition she complained of heaviness and pressure and occasional sharp pains over the left cheek, radiating into the left eye. Often her eyes felt "gritty" and this feeling was usually accompanied by somnolency. Some of her other complaints were occasional sensations of numbness in the finger-tips, feeling of fatigue upon arising in the morning, general nervousness and occasional dull headaches. On account of the paresthesia in face, antrum disease had been suspected by her physician; she was then referred to a rhinologist who excluded sinus and antrum disease. Because of the eye-symptoms she was then referred to an ophthalmologist who found some refractive errors which were corrected by proper glasses. The ocular fundi were pronounced normal. She was then sent to Dr. Grinker for her nervous symptoms.

An examination of viscera, reflexes, general sensation and motion revealed normal findings. The fundus appeared normal. Pupils reacted normally to light and accommodation. There was complete deafness in the left ear. There were tender points over the spine, the vertex and over the left ovarian region. As her symptoms, both positive and negative, seemed to point to functional nervous disease, and as there was nothing definitely characteristic of organic disease Dr. Grinker inclined to the view of this being a functional case and treated her accordingly with but indifferent results. In the following September—about six weeks after her first visit—she came to Dr. Grinker's office staggering and in a state of alarm. She related to him that as she was crossing the street she became dizzy, staggered and everything appeared black to her. With great difficulty did she escape being run over by the street cars, and she feared that she was going to be blind. For the first time during her illness she had suffered from intense headache, vertigo and vomiting about two days ago. Her gait at this examination was typically cerebellar in kind—a reeling from side to side. The fundi showed a bilateral choking, indicating extreme edema of the nervehead. Of course, all of her previous so-called functional symptoms now assumed an entirely different aspect. The deafness which had come on a year ago was evidently due to pressure on the acusticus, the paresthesia in the face, to trigeminus involvement, and the peculiar visual disturbances, to transient edema. The recent headache, vomiting and vertigo, added to the cerebellar gait in a patient who had acusticus and trigeminus involvement, were symptoms making the diagnosis of tumor in the cerebello-pontile angle certain.

Immediate operation was advised. The diagnosis was verified upon the operating table, but the patient did not survive the operation.

# Periscope

## Miscellany

A DISORDER DUE TO EXPOSURE TO INTENSE HEAT, CHARACTERIZED CLINICALLY CHIEFLY BY VIOLENT MUSCULAR SPASMS AND EXCESSIVE IRRITABILITY OF THE MUSCLES. (PRELIMINARY NOTE.) David L. Edsall (Journal of the American Medical Association, December 5, 1908).

The condition described is one that occurs in firemen of stationary engines, ships' stokers and others engaged in the fire-rooms and engine-rooms of merchant and naval vessels; iron-rollers and puddlers, and others engaged in those parts of metal-working that entail exposure to severe heat; in some of those employed in sugar-refineries; and, indeed, so far as the author has been able to learn, in persons generally who are exposed in their occupation to very high temperatures for considerable periods of time, especially when they are obliged to perform severe muscular labor. In such occupations, the temperatures in which the men work are frequently over 150° F.; and, indeed, often much higher than this, occasionally reaching 190° F., or even above the latter point. The disorder may also occur from exposure to a high general atmospheric temperature, though this is probably rare. It is, however, especially common in summer, evidently because the occupational conditions producing it are then intensified.

Its chief characteristics are very painful tonic muscular spasms, involving especially the muscles of the hands, forearms, abdominal wall, legs and feet; though, at times, any or in fact nearly all groups of muscles may be affected. The individual spasms last a half-minute or a minute; they tend to recur very frequently, and are quickly excited by attempts at voluntary use of the muscles. They are also very readily excited by mechanical or electrical stimulation of the muscles, beginning at the point where the stimulus is applied; the pain of this apparently producing involuntary contraction elsewhere, and the latter exciting spasm, which may be widespread. Slight continuous spasm occurs in some cases in some groups of muscles. There is in some cases a remarkable grade of widespread myokymia in the intervals between the severe tonic spasms. The condition, grossly, often resembles tetany; but Chvostek's and Trousseau's symptoms are absent, the active symptoms of an attack are ordinarily only a few hours to two days in duration, and the violent irritability of the muscles, the frequently severe myokymia, and other points distinguish it, especially the conditions of metabolism, which were exactly the same in two cases studied, and quite different from those in any similar disorders, so far as is known. Several physicians, however, have described to the author cases that they had called tetany, but that they subsequently concluded were almost certainly examples of the condition under discussion; likewise, cases that had been previously diagnosed under various other names have been described to him, since his earlier report on the disorder, as being really instances of this character.

The cases vary greatly in severity, occasionally being so violent as to be fatal—probably chiefly from toxemia, as the severe cases appear toxic

and most of those seen had albuminuria of toxic characteristics; and the conditions of metabolism are such that severe toxemia must readily occur. Exhaustion also probably contributes largely to the fatal result in some violent cases. The disease seems (from reports given the author by a considerable group of physicians who see many persons exposed to its occurrence) to be extremely common in a number of occupations. The author has seen seven cases in general medical service in hospitals, including two cases that he described in 1904. Previous to the latter year, it had apparently been only very casually mentioned once or twice in medical literature, without having been described as a distinct disorder or studied at all. Since that time, it has been very briefly described by two medical officers of the navy (Beyer and Elliott) as peculiar to men working in the hot parts of vessels. The author's first cases, however, were in men employed on land—as have been all those he has seen since; and his investigations regarding the experience of a large group of physicians show that it is more or less common in a variety of occupations.

It presents none of the characteristic symptoms of heat-stroke. The temperature may not be disturbed, may be moderately elevated, or may be more or less markedly subnormal—the latter especially in the severe cases. Cerebral symptoms have been absent in all the cases accurately known to the author, except in the advanced stages of a few extremely violent cases described to him by others, which were usually fatal. No changes in sensation, no definite alterations in reflexes, etc., that would indicate that any spinal involvement was found. Clinically, the disorder appears to be situated chiefly in the muscles; and the very remarkable conditions of metabolism that were found in two cases studied were such as to make it extremely probable that extensive acute degenerative changes occur in the muscles. This probably indicates the nature of the condition, since similar conditions of metabolism do not occur, so far as any studies have indicated, in central nervous diseases, or as a consequence of the excessive muscular work accompanying spasms due to such causes as tetanus.

It is probable, however, that cases will be found occasionally in which there are symptoms and lesions indicating coincident or secondary spinal and cerebral involvement. Such lesions may of course readily occur, very quickly as a secondary result of the severe toxemia that these patients seem to exhibit (which is probably due largely to their extensive and sudden tissue destruction); also the men who get these attacks are often exposed to gases that are known frequently to produce central nervous lesions, and they may readily get a complex condition due to the combined effects of heat and gases; and further, heat may, of course, readily produce, in some cases, central lesions coincidentally with lesions in the muscles. The author has notes of several cases in which central nervous lesions of varied kinds appeared to have been produced by occupational exposure to intense heat, without producing these muscular spasms. Hence it is readily conceivable that the two may occur coincidentally.

In characteristic cases of the kind described, however, it seems probable that the most marked and peculiar feature is a muscular disturbance, due to degenerative changes in the muscle-protein. This must be determined by morphological studies of the muscles, or perhaps even more definitely by chemical studies as the latter might show alterations that morphological methods might overlook, for the conditions of metabolism are such as to suggest that there is not simply a general destruction of muscle protein but a splitting off of certain parts of it.

AUTHOR'S ABSTRACT.

THE VALUE OF OPHTHALMOSCOPIC EXAMINATIONS IN MENTAL DISEASES. Drs. Lukacs and Markbreiter (Weiner med. Presse, 48, 1907, November 3).

The authors publish their results of a carefully conducted ophthalmoscopic examination in patients with mental diseases. The expectation that the results of the ophthalmoscopic examination would enlighten us as to the condition of the cortex has not been realized. However, the examinations are important on account of the disease changes, and on account of the frequent occurrence in the eyes of signs of degeneration which are of imminent importance in mental diseases. The most important signs of degeneration are developmental defects which can be explained on the defective development of the nervous system, such as trophic disturbances and functional defects of the sense organs. Signs of degeneration are anomalies in the development of the retina, anomalies of the papilla, indistinct papillary borders, deviating forms of papilla as oval or oblong and papillary pigmentation; these the authors consider abnormalities if not accompanied by astigmatism. Conus temporalis and pigmental conus occur frequently in mental diseases. Conus inferior is an absolute sign of degeneration of pathognostic value according to Wollenberg. Meniscus is also considered by many authors a developmental anomaly. The authors have carefully tabulated their results, and especially interesting are the results in paralysis, alcoholic insanity, dementia præcox, amentia, hysteria, neurasthenia, manic depressive insanity, paranoia, epilepsy and idiocy. The authors draw the following conclusions: (1) The ophthalmologic examination reveals important information concerning the degeneration of the patient. (2) The signs of degeneration of the eyes occur most frequently in the degenerative diseases, as paranoia, epilepsy and idiocy, but may occur in the functional mental diseases, especially in the constitutional forms of alcoholism and hysteria. (3) The changes in the fundus oculi are frequent in mental diseases and not only when the etiological factor explains the findings as in paralysis, alcoholism, idiocy or hereditary syphilis. Very frequent is the hyperemia of the papilla and on account of the frequency of its occurrence it must be taken in consideration, although we are unable to appreciate and interpret its value.

FRED J. CONZELMANN.

STUDIES IN TABES DORSALIS, WITH ESPECIAL CONSIDERATION OF THE LARYNGEAL SYMPTOMS. Dr. Graeffner (Münch. med. Woch., 54, 1907, September 3).

The author publishes his results of his investigation of 221 cases of tabes dorsalis. The motor disturbances of the larynx may be divided into paralysis, crisis and incoordination. Of these perverse action, ataxia, twitching, tremor and oscillatory movements are considered. Paralysis occurred in 54, incoordination in 28, laryngeal crisis in 26 cases and ataxia was observed in 14 cases combined five times with tremor of the vocal cords. Tremor alone occurred in 14 cases. Paralysis of the left crico-arytenoideus posticus was present in 28, of the right in 7, and of right and left in 8 cases. In the second examination three and one-half years later, according to the author's schedule, he discovered 14 new cases with paralysis of the postici, in 7 of these the left posticus, in 2 the right posticus and in 5 cases the right and left postici were involved. Of these cases one was complicated with ataxia and 4 with tremor of the

vocal cords. At the second examination 6 other cases had tremor of the vocal cords. Twenty per cent. of the cases showed disturbances at the second which did not exist at the first examination. The author concludes from this, that the larynx, in *tabes dorsalis*, if the disease runs its natural course and the patient is not carried off by an intermittent disease, is in a much higher degree a *locus minoris resistentiæ* than is commonly acknowledged. The relation that exists between the laryngeal and epigastric crisis, as Oppenheim pointed out, the author has confirmed in his cases. Of his 26 cases of laryngeal crisis, 20 had epigastric crisis also. To alleviate the paroxysms of pain aspirin and morphine proved to be the best remedies. Recently he has obtained good results from the administration of coryfin, 6 drops on a lump of sugar three times daily.

FRED J. CONZELMANN.

THE BEGINNING OF SILVER MATURITY OF NEUROFIBRILS IN THE SPINAL CORD OF MAMMALS. Hofsaht (*Journal f. Psychologie u. Neurologie*, Vol. XI., no. 3).

The author begins by stating that as soon as it was positively ascertained by means of the silver methods of Cajal and Bielschowsky that neurofibrils exist within the cells and fibers of the nervous system, the question arose at what stage in the development of the nervous system these fibrils originated. On investigation it was soon found that the silver impregnates not only the fibrils in the original sense but also certain fine fibers in the realm of the nervous system, and that the various fibrillar systems and elements of the nervous system take on the silver in lawful successions. All that developed the more extensive and different question, viz., the sequence of silver impregnation of the different parts of the central nervous system, hence the investigation of the so-called "silver maturity" of neurofibrils was undertaken. The question as to the earliest manifestation of silver impregnation of neurofibrils is of great significance, firstly, because it is of great interest to know at what stage in the development of the individual the ingredients of the nervous system show a specific nervous character, and secondly, because in these early studies certain formations are individually impregnable which later can only with difficulty, or not at all be differentiated.

The author briefly describes the views of different investigators, such as Held, Gierlich, Herxheimer and Brodman, and then gives his own results. In the embryos of cats and rabbits he found fibrils impregnated with silver in the earliest stages of the development of the cord, before there was any formation of the longitudinal system of fibers or any morphological differentiation. During that stage he found fibers with the silver stain in the anterior and posterior roots, in the anterior commissure, and in a system of arcuate fibers. Furthermore, the cells in the region of the later anterior horns showed intercellular impregnated fibrils in the form of a reticular cone which surrounded, basket-like, one pole of the neuroblast body and from which an axis cylinder continuation could be followed to one of the roots. In this early stage of fibrillation process there can also be shown a system of fibers which runs from cells of the anterior horns to the region of the posterior roots and partially enters into it, a system which was described in the lower vertebrates.

A. A. BRILL (New York).

HYSTERIA AND THE REDUCTION METHODS OF DUBOIS. Smith Ely Jelliffe (New York Medical Journal, May 16, 1908).

Jelliffe does not consider hysteria as a malady due to a specific disease process. He regards it "rather as a collection, in an individual, of primitive traits of psychological response to psychophysical factors." Briefly stated the psychical characters of hysteria are as follows: Instability, marked influence of suggestion, negativism and egocentric nature; and the last may lead to a number of secondary attributes—romantic accusations, sensational confabulations, self-mutilation, criminal propensities, etc. The physical stigmata result from suggestibility. Hysterical manifestation may appear in connection with functional and organic nervous and mental diseases. Hysteria "represents a break in the development of the mentality" and therefore it is a reaction of the young. It is uncommon in those whose mentality has reached maturity, its reappearance in the involution epoch is quite evident. Dwellers in rural districts and workmen of the proletariat are prone to be affected with this diseased reaction. Jelliffe agrees with Hellpach who says: "Hysteria is the ordinary response to the exigencies of life in all those people whose roots have been torn up, or who have been disenchanted with their ideas, but who still present the simplicity of the psychic reaction of a child." Hysteria diminishes in frequency with the progress of civilization. "I believe that the era," Jelliffe writes, "of the grand manifestations of collective hysteria may be considered as closed. Man possesses to-day in the face of causes of intellectual, political and social oppressions to false ideals means of reaction which he did not formerly possess. The liberty of the press, democratic political institutions, workmen's organizations permit him to manifest his discontent otherwise than by hysteria." The treatment of hysteria must necessarily be carried along the lines suggested by Dubois which consists in reconstruction of mental synthesis on good logic.

KARPAS (New York).

APROPOS OF PECULIAR PUPILLARY PHENOMENON; AT THE SAME TIME A CONTRIBUTION TO THE QUESTION OF THE HYSTERICAL PUPILLARY IMMOBILITY. Emil Reich (Deutsche med. Woch., February 20, 1908).

The patient, 33 years of age, suffered for a number of years from hysterical seizures, which were accompanied by active bodily movements and without loss of consciousness. While in this state her pupils were widely dilated and did not respond to light. With the disappearance of the seizures her pupils became normal. However, when the patient was allowed to scream loudly or indulge in strong muscular activity, then the pupils became wildly dilated and did not react to light. Reich discusses the various theories which may explain this phenomenon, and finally concludes that severe muscular exercise causes dilatation of the pupils and their inefficient response to light, while convergence reaction remains intact. This condition is brought about by active stimulation of the sympathetic and in many cases voluntary dilatation is due to this similar mechanism.

KARPAS (New York).

APROPOS OF HYSTERICAL HEMIPLEGIA. Ernst Schultze (Deutsche med. Woch., March 26, 1908).

Schultze reports a case of hemiplegia of a psychogenic nature. His patient, 65 years of age, was always psychically abnormal, egocentric,

and overestimated his woes. After an insignificant accident (he fell on his right side) he developed a right-sided hemiplegia. Physical status revealed the following: Weakness of right upper and lower extremities accompanied by anesthesia and analgesia on the same side. No marked atrophy or contractures were noticed. The face was not affected and naso-labial folds on each side were normal. The tongue deviated to the left side, due to spasm of right genio-glossus muscle. Right ptosis caused by spasm of right orbicularis muscle and not by paralysis of superior elevator palpebrae. Contracted visual fields were demonstrable. Patient could read with the right eye at the distance of 5 cm. (with the left 15 cm.). Right corneal reflex was much diminished and the pharyngeal reflex (on right side) was absent. Olfactory sense was impaired on the right side. Not infrequently patient would mistake the paralyzed side for the well one. On account of the long duration the prognosis in this case is rather poor. The diagnosis of hysterical hemiplegia is based upon physical stigmata, spasm of right orbicularis and genio-glossus muscles, and absence of facial involvement, Babinski's reflex and atrophies and contractures. It is surprising that no mention was made of the patient's general psychical reactions.

KARPAS (New York).

GENERAL PARALYSIS IN THE SENILE PERIOD, WITH A REPORT OF TWO CASES. INCLUDING POST-MORTEM EXAMINATIONS. M. J. Karpas (New York Medical Journal, 1908, January 25).

The writer reviews briefly the literature on the subject and gives in detail the clinical history and post-mortem findings of two cases observed by him. General paralysis is very rare in the extremes of life. Paresis usually occurs between the ages of thirty and fifty. Some authors doubt its occurrence after fifty-five. The mental picture of senile paresis bears a striking resemblance to dementia senilis. The onset of the psychosis is marked with intellectual enfeeblement and the delusions are relatively rare. The grandiose ideas are not prominent. The author's two patients had delusions of grandeur and in one case they were markedly accentuated. Both patients presented many features characteristic of senile dementia. Illusions and hallucinations were not observed. In one case the speech was fairly well preserved throughout the course of the disease. The duration of the mental malady is, as a rule, short, but was, however, exceptionally long in one case. The writer calls attention to the difficulty of making a diagnosis of general paralysis in the senile period. Quite often such cases are mistaken for senile dementia, and, indeed, in some instances the differential diagnosis between the two maladies is impossible without the aid of the cytological examination and necropsy.

FRED J. CONZELMANN.

THE GENESIS AND NATURE OF HYSTERIA. J. W. Courtney (Boston Medical Surgical Journal, March 12, 1908).

Courtney offers a critical review of three main theories of hysteria—Freud's "Sexual Conception," Babinski's "Suggestion Hypothesis" and Janet's "Views which make Hysteria a Purely Psychic Disorder." The author has no theories of his own to propound, but he desires to express his convictions which he derived from clinical experience, and in his own words, "I believe that hysteria is the clinical expression of a simple



adynamic condition of the brain, and that in our part of the world we rarely see more than a '*form fruste*' of the classical picture. By this I mean that somnambulistic phenomena (which Janet says constitute more than half of the so-called accidents of hysteria), the complete abulias, the paralyzes and contractures, even the absolute hemianesthesias and amau-roses, are genuine rarities."

KARPAS (New York).

HYSTERICAL FANCIES AND THEIR RELATIONS TO BISEXUALITY. S. Freud  
(*Zeitschrift f. Sexualwissenschaft*, January, 1908).

To those interested in the works of Freud the article "*Hysterische Phantasien und ihre Beziehungen zur Bisexualität*," published in the January number of the *Zeitschrift f. Sexualwissenschaft*, is especially gratifying and refreshing. Such a publication has for a long time been looked forward to, and this terse and lucid formulation has more than come up to expectations. When the "*Histerie Studien*" were first published in 1895 much had been said for and against the theories advanced in this book. On the continent it was first greeted by a storm of adverse criticism tantamount to persecution, and then a latent—silent—period followed during which everything referring to Freud, even remotely, was immediately consigned to oblivion—nay, it was verdrängt. The venerable critics not being able to refute any of Freud's ideas found it easier to act in accordance with the old adage "*si tacuisses philosophus*," etc. They simply kept their peace hoping thereby to prevent the universe from becoming contaminated by ideas which to them were incomprehensible and hence displeasing. This latent period lasted about ten years, when lo! there was a flaring up of the smouldering fagots. By one of those fortuitous, inexorable laws which always come to the aid of great ideas, Freud's works are now more than ever read and discussed, and it is safe to say that henceforth they will receive the just recognition so long withheld. It was by mere chance that Bleuler and Jung of the Zürich Psychiatric clinic became acquainted with Freud's works. Before discountenancing or repudiating everything, as so many others had done before them, they, as impartial and true scientists, thought it well worth while to thoroughly study and practically examine Freud's theories before expressing an opinion. The expression, "*thoroughly study and practically examine*," is used purposely, because it is known that before Freud's ideas gained favor in the Zürich school they were subjected to very long, painstaking and severe tests. And, indeed, in order to understand Freud and form an opinion of his works this is absolutely necessary. To interpret the most intimate psychological entities of personality a mere superficial knowledge does not suffice. A thorough training in both normal and abnormal psychology is an absolute prerequisite. The results of the aforesaid investigations are set forth in the works of Bleuler, Jung, Riklin and others. They clearly show that Freud's mechanisms are not only to be found in hysteria and the psychoneuroses but also in many "confused and delusional" asylum cases. (See the excellent works of Jung and Bleuler.)

Since 1895 Freud, despite all discouragement, has labored on and has given to the world a prodigious amount of epoch-making literature, among which may be named "*Die Traumdeutung*," "*Drei Abhandlungen zur Sexualtheorie*," and many others. He has also seen fit to modify some

of the ideas originally expressed in the "Hysterie Studien," and in this article he gives a comprehensive summary of his views.

The author begins by asserting that hysterical fancies show a close relationship to the production of neurotic symptoms. Day dreams or reveries are the origin of such fancies. Reveries are universally found both in the normal and abnormal, and are equally frequent in both sexes. In the feminine sex they are exclusively of an erotic nature while in men they may be either of the erotic or ambitious type, though if a thorough analysis be made of the latter it will probably be found that all heroic actions, business successes, etc., were brought about in order to please a woman and be preferred to others. All hysterical fancies that were amenable to examination showed involuntary incursions of reveries. These fancies may exist as unconscious or conscious, but once they merge into the unconscious they may become pathogenic and express themselves in symptoms or attacks. Under favorable conditions such unconscious fancies may be seized by consciousness and thus brought to the surface. A patient while walking suddenly found herself in tears and rapidly reflecting over the cause of her weeping her fancies became clear to her. Unconsciously she fancied herself in delicate relationship with a well-known piano virtuoso whom she only knew by reputation. In her fancy she bore him a child (she was childless) and he then deserted her, leaving her and her child in misery. At this stage of the romance she broke into tears. Such fancies may be unconscious from the very beginning or what is more frequent, they are conscious at first and then by repression merge into the unconscious. Such unconscious fancies are closely connected with the sexual life. During the period of masturbation they help toward sexual gratification. Onanism is originally a pure auto-erotic act effected for the pleasure obtained from an erogenous zone, later in life, however, it becomes blended with a wish presentation of the object-love and is then a partial realization of the sexual act. The onanistic act consists of two parts, the evocation of the fancy and the active performance of self-gratification at the height of the same. If the masturbo-fantastic gratification is not accomplished, the action remains undone and the fancy merges from the conscious to the unconscious state. Ungratified sexuality if not sublimated, *i. e.*, if not diverted to a higher aim, helps to refresh the unconscious fancy which eventually, at least partially, manifests itself as a morbid symptom. Hysterical symptoms are unconscious fancies brought to light by the process of "conversion." Psychoanalysis gives us the means of finding from the symptoms the unconscious fancies and then to bring them back to consciousness. In this way it is found that contently the unconscious fancies of hysterics correspond perfectly to consciously performed acts of gratification of pervers. The actions of the Roman Caesars are examples of such. The delusional formations of paranoiacs are of the same nature, they are fancies which became conscious and are the products of masochistic sadistic components of the sexual impulse.

The relations between fancies and symptoms are not simple but rather complicated, especially in old, fully-developed cases where one symptom does not correspond to one single unconscious fancy but to a number of the same.

The author then formulates the following axioms: (1) The hysterical symptom is the memory symbol of certain efficacious (traumatic) impressions and occurrences; (2) the hysterical symptom is the compensa-

tion by conversion for the associative return of the traumatic occurrence; (3) the hysterical symptom, like all other psychic formations, is the expression of a wish realization; (4) the hysterical symptom is the realization of an unconscious fancy which serves as a wish fulfilment; (5) the hysterical symptom serves as a sexual gratification, and represents a part of the sexual life of the individual (corresponding to one of the components of his sexual impulse); (6) the hysterical symptom, in a fashion, corresponds to the return of the sexual gratification which was real in infantile life but had been since repressed; (7) the hysterical symptom results as a compromise between two opposing affects or impulse incitements, one of which strives to realize a partial impulse or a component of the sexual constitution, while the other strives to suppress the same; (8) the hysterical symptom may undertake the representation of diverse unconscious non-sexual incitements, but can not lack the sexual significance.

As can be seen, axiom (7) expresses most exhaustively the essence of a hysterical symptom as a realization of an unconscious fancy, and axiom (8) gives the proper significance of the sexual moment.

The author then states that whereas in the majority of cases it is possible by psycho-analysis to reach from the symptoms to the sexual components in a manner shown in the "Drei Abhandlungen zur Sexualtheorie," some cases give rather unexpected results. In such, the author found that one or even a series of fancies in which the most primitive was of a sexual nature, did not solve the symptom. For the solution of such symptoms there must be two symptoms, one of the masculine and one of the feminine type. One of the fancies arises from a homosexual impulse. This causes the author to formulate axiom (9): A hysterical symptom is the expression on the one side of a masculine and on the other of a feminine unconscious sexual fancy. The last axiom is not so weighty as the others. "It is neither found in all symptoms of a single case nor in all cases." Yet it is found in a sufficient number of cases to justify the formation of the axiom. It signifies the highest stage of complicateness of the hysterical symptoms and is only found in long-standing cases. The fact, however, that this symptom is met in many cases corroborates the author's assertion in the "Drei Abhandlungen zur Sexualtheorie," namely, that the bisexual predisposition of man can be readily demonstrated in neurotics. Another analogy is the familiar masturbator who consciously lives through in his imagination both fancied situations of man and woman. In some hysterical crises both situations are observed, thus one of the author's patients during a crisis presses his garments tightly to his body (as woman) and with the other hand he attempts to tear them off (as man).

These axioms quite comprehensively explain the essence of Freud's hysterische Anschauungen. They not only give the thorough determinations of hysteria but also of the bisexual theory. To the initiated these axioms express in definite and precise terms what the author has for years promulgated, especially in his later works (Comp. "Drei Abhandlungen, zur Sexualtheorie, Bruchstück einer Hysterie-Analyse," *Monatsschrift f. Psychiatrie und Neurologie*, Bd. XVIII., Heft 4). Those who are not accustomed to Freud's way of thinking may find themselves in a maze, but it is impossible to enter here into detail. A knowledge of Freud's works is indispensable.

A. BRILL (New York).

INDICATIONS FOR INDUCTION OF ABORTION IN PSYCHICAL DISEASES. Dr. Friedmann (*Deut. med. Woch.*, 34, 1908, May 21).

Until recently the abortion in psychical diseases was only considered in regard to typical puerperal psychoses. The operation was in fact disregarded because it was without actual influence on the development and course of the psychoses. With Jolly and A. Pick the author has brought forth an essentially new indication, which does not occur very frequently, but is practically more important than the older indications. The new indication is the "psychopathic reaction" in individuals with neuropathic constitutions and without psychical resistance, accompanied with an increased morbid fear at birth. The pathologic distinguishes itself from the normal fear at birth, that in spite of trivial cause the fear becomes overwhelmingly strong and drives the individual to suicide. It preoccupies the entire feeling and thinking of the woman and leaves no time for useful employment. The fear is persistent for months and no remedy seems to be of any avail. The psychopathic reaction differs from a real psychosis in that it is brought on entirely through the psychical effect of pregnancy and that the patient recovers completely without exception as soon as the causative factor is removed; that is, when abortion is induced to terminate pregnancy. The dangers of the psychical disease are suicide and a threatening emaciation, owing to the intense fear. As institutional treatment would only guard against suicide, in these women who are otherwise psychically intact, abortion is justifiable for humanity's sake. Judges and lawyers do also approve of such a procedure when pregnancy is the sole cause of the mental aberration.

FRED J. CONZELMANN.

ALCOHOLISM AND CRIMINAL JURISDICTION. Prof. Heilbronner (*Muench. med. Woch.*, 55, 1908, March 31).

How should an individual, committing a criminal act under the influence of alcohol be treated? In a somewhat lengthy article the author discusses this question in great detail. It has of late years been frequently discussed in psychiatric literature. The criminal law of the German Empire does not mention drunkenness as an excuse from criminal punishment, unless it is considered as a mental disease. Doubtless every alcoholic intoxication, may in a broad sense, be viewed medically as a mental disease. Experience and statistics prove the fact that a very great number of all criminal acts have been committed by individuals while under the influence of liquor. Two practically very important questions present themselves: (1) Should the alienist be heard in every kind of criminal act committed under the influence of liquor? (2) Can he assist the judge by pointing out the limits of a simple intoxication from that of a senseless or unconscious condition due to alcohol? The author agrees with Aschaffenburg's opinion, that for the interest of public safety the purely medical conception of the action of alcohol must give way to the judicial interpretation of crimes committed under the influence of alcohol. The physician, although he considers alcoholism as a psychical disturbance, must not treat it as such. It is still a question whether these individuals are really in need of special treatment, and whether medical treatment in a hospital or asylum would have the same beneficial effect as our prison wards. The alienist will do well not to promise too much. In matters where he wishes to be heard he is not entitled to claim too much on the ground of theoretical constructions for his special domain.

If he does, failure and disappointment will result and he will lose the confidence and consideration in matters where his advice would serve for the good of the public. Psychiatry, like medicine, is a social science. Problems of great importance, outside of the asylum walls, must be solved and explained by the psychiatrist; the solution of these problems may become great benefits to the public. Heilbronner's treatise deserves the attention of every intelligent citizen interested in the welfare of the people.

FRED J. CONZELMANN.

**CEREBRO-SPINAL MENINGITIS.** Trautmann and Fromme. Hygienic Institute of Hamburg (Münch. med. Woch., 55, 1908, April 14).

In 1907 93 cases of cerebro-spinal meningitis were officially reported in Hamburg. During the months of March, April, May and June, 69 cases occurred. As 88 cases were admitted to the large hospitals, the diagnosis was always made by examining the cerebro-spinal fluid bacteriologically. In 26 patients sick with the disease the Hygienic Institute of Hamburg was asked to establish the diagnosis. It had, however, the epidemiological important problem to examine the healthy individuals who had lived with and in the neighborhood of the patients sick with the disease. Three hundred and forty-four specimens for examination were obtained from the throats of the suspected individuals. In 59 specimens corresponding to 32 different individuals the meningococcus of Weichselbaum was isolated. Of 12 specimens of cerebro-spinal fluid from 11 different patients, in seven the meningococcus was found. In one the diplococcus lanceolatus and four of the specimens were sterile. Of 20 throat specimens from 20 cases strongly suspected of meningitis, 3 persons, 15 per cent., were found to carry the germ. In two of these cases the spinal fluid was examined with positive findings. Of 311 throat specimens from 261 persons, 49 specimens, 16 per cent., were positive, or 24 men, 9.2 per cent., carried the disease germ. These figures of healthy germ carriers are very important but are remarkably low. Ostermann, a pupil of Flügge, says 70 per cent. of all persons in the immediate surrounding of a case of cerebro-spinal meningitis carry the germ in the pharynx. Bruns also found a high percentage and Bochall reports a case occurring in barracks where 62.5 per cent. of the soldiers living in the same barracks carried the disease germ. The authors observed cases in which all the healthy members of the family were carrying the disease germs for 44 to 66 days. The authors conclude their article with an excellent discussion of the bacteriology of cerebro-spinal fever.

FRED J. CONZELMANN.

**THE SIGNIFICANCE OF THE ACHILLES TENDON REFLEX.** Dr. Franz Conzen (Muench. med. Woch., 55, 1908, May 12).

For a period of three years the writer has examined with Babinski's method for the presence or absence of Achilles reflex, 3,290 patients that presented themselves for examination in the neurological department of the medical polyclinic. He found that the Achilles reflex is never absent normally. It was only found diminished or lost when a pathological condition of the nervous or muscular system could be established. In two cases of alcoholic neuritis he found the patellar reflex present and the Achilles reflex absent. Biro has found that in neuritis of the sciatic nerve the Achilles tendon reflex is universally weaker and very often lost. Biro considers this a very important symptom, as it can be discovered

when sensory disturbance, atrophy, or changes in the electrical reaction are still absent. The writer fully agrees with Biro, but states that in a few cases with sciatic neuritis he found the Achilles reflex increased during the first few days of the disease. In one case of spinal progressive muscular atrophy the Achilles reflexes were lost, while the right patellar reflex was absent and the left diminished. As a rule they are markedly changed in this disease. In *tabes dorsalis* the Achilles reflexes show usually the same behavior as the patellar reflexes, but in quite a number of cases the author found the patellar reflexes present and the Achilles reflexes totally lost. He considers this phenomenon of great importance for the early recognition of *tabes dorsalis*. In a great number of *tabes* cases the Achilles reflex is lost earlier than the patellar reflex. The examination of the Achilles reflex should never be neglected as it is just as much a constant symptom as the patellar reflex, and at least reacts quite as perceptibly to diseases of the nervous system as the patellar reflex. Unilateral absence of the Achilles reflex means a pathological process and very often a difference in the Achilles reflex points to a morbid change of the nervous system.

FRED J. CONZELMANN.

FOCAL SYMPTOMS IN DIFFUSE BRAIN DISEASES. Dr. Alfred Saenger (Muench. med. Woch., 55, 1908, May 12).

Griesinger defined focal symptoms of brain diseases as those manifestations which are produced by a lesion of a definite area of the brain, in contradistinction to general symptoms, such as dizziness, headache, vomiting, disturbance of consciousness or changes in pulse and respiration which may occur in any disease of the brain. Monakow has just recently advanced a new conception which has, as yet, found little favor in neurology; that is, the conception of diaschisis. A division process connecting with localized interrupted fibers through the brain foci and changing according to circumstances. They occur in remote cerebral areas, either in corresponding convolutions of the one or in remote convolutions of the other hemisphere. The appearance of focal symptoms do not always indicate a localized organic change. The writer reports a number of cases in which a diffuse process existed with focal symptoms. Among the cases reported with focal symptoms the following conditions were present: Diffuse tuberculous meningitis, diffuse purulent meningitis, diffuse sarcomatous meningitis and diffuse leptomenigitis. Chronic diffuse carcinomatous encephalitis may occur as a diffuse brain disease and as such be greatly misleading if focal symptoms occur. Chronic hydrocephalus has frequently been diagnosed as brain tumor owing to the focal symptoms produced by the condition. Diffuse arteriosclerosis of the brain vessels may cause focal symptoms. Pick has called attention to the focal symptoms in brain atrophy of the senile period. In multiple sclerosis and progressive paralysis focal symptoms often play a great role. The author's cases show the frequency of the various kinds of focal symptoms in diffuse brain diseases. So prominent may they be that the fundamental disease of the brain remains entirely unrecognized. A closer study of focal symptoms, and how they originate, is necessary. Perhaps Monakow's teachings will bring out new facts to the origin of focal symptoms.

FRED J. CONZELMANN.

DEPRESSION STATES AND THEIR TREATMENT. Sommer (Deutsche medizinische Wochenschrift, June 18, 1908).

Sommer states that "the conception of melancholia in the course of centuries has undergone many changes and therefore a clear understanding of it is important." Melancholia may be the very foundation of a mental disorder, or it may be purely a symptomatic expression of a variety of psychical infirmities. (1) Symptomatic melancholia occurs in organic brain disease—paresis, cerebral lues, tumor cerebri and multiple sclerosis. (2) Melancholia may be a symptom in deteriorating psychoses—such as in dementia præcox, senile and pre-senile psychoses. Depression often accompanies confusional and infective states and paranoia. The differentiation between the depression in the deteriorating process and pure states of melancholia is rather difficult. A uniform presentation of depressive affect, sitophobia, suicidal tendencies, melancholy delusions in the sense of ideas of sin, frequent agitation of a depressive character, or stupor with a depressed expression—all these speak in favor of a good prognosis. On the other hand, should the picture of melancholia present such symptoms as indiscretion, senseless behavior independent of affect, emotional apathy or cheerfulness, poorly defined ideas with peculiar melancholic coloring in the sense of self-reproach and ideas of sin and furthermore stereotyped behavior, without a corresponding depression, like mannerism, then the acceptance of primary dementia with the subgrouping of hebephrenia, paranoidea, katatonia may be considered. (3) Another important class of depressions is based on nervous predispositions which may lead to severe forms of melancholia with suicidal tendencies and delusions, viz., (1) psychogenic, (2) neurasthenoid, (3) epileptoid and (4) autotoxic. In the first, functional disturbances in the motor and sensory spheres are the usual accompaniments; in the second exhaustion and fatigue are the foundation of the disease; in the third epileptic stigmata are in evidence; in the fourth, metabolic disorders are prominent, as in diabetes, uremia, thyroid diseases, etc. Not infrequently one sees cases in which a clinical picture of melancholia contains psychogenic, neurasthenic and epileptoid features and in such instances the diagnosis is difficult.

In hospitals two forms of melancholia are of frequent occurrence: (a) Melancholia—endogenic type—developing independent of external causes and is usually recurrent, but not related to the manic depressive group. As a rule, in these cases, depressive ideas, sitophobia and suicidal tendencies are quite common. (b) Melancholia relating to manic depressive insanity—it usually runs a circular course. Sommer emphasizes that recurrent depression should not be classified with the manic depressive group. His treatment for various forms of melancholia is general, hypnotics, tonics, psychotherapy, symptomatic indications, etc., are discussed.

KARPAS (Ward's Island, N. Y.).

## Book Reviews

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SOME POINTS IN THE SURGERY OF THE BRAIN AND ITS MEMBRANES. By Charles A. Ballance, M.V.O., M.S., F.R.C.S. Macmillan and Co., London and New York, 1907.

With this modest title Mr. Charles A. Ballance has contributed a most opportune work to medical literature. Recently it had seemed that such a book was necessary to arouse the apathy of the medical profession towards this subject; and Mr. Ballance brings most forcibly into the lime-light this borderland region twixt clinical and surgical aspects of the brain. His work impresses one most favorably, even though his arrangement of the book into lectures rather than chapters seems to make the presentation suffer in clearness.

The book contains the material prepared for the Lettsomian Lectures delivered before the Medical Society of London in 1906. The personal experience of many years, together with clinical histories of his own and numerous other cases, both in this country and abroad are given to illustrate his statements. The subjects treated embrace meningitis, abscess and brain tumors. The most valuable lecture is that on some points in the surgery of brain tumor. In addition to presenting numerous and excellent illustrations of tumors in various portions of the brain, Mr. Ballance discusses the important localizing symptoms in the cerebrum and cerebellum, giving many cases from literature and some of his own reports to illustrate his remarks.

In this lecture he emphasizes the observations made by him twelve years ago in regard to brain surgery in tumor cases, viz.: "That patients may be entirely cured, others partially cured, and most all relieved of their distressing symptoms."

He has entered somewhat fully into the discussion of the function of the cerebellum together with a discussion of the cerebellar syndrome. His discussion of the tumors of the cerebellar pontile angle is very cursory. We agree fully with him, "that when the tumor cannot be localized, the skull should be opened to relieve intracranial pressure." "No patient should be allowed to become blind from optic neuritis."

Lecture I. gives a short account of Dr. Lettsom's life; the main portion of the lecture, however, deals with the cerebral membranes and surgical intervention in disease, a brief discussion of the anatomy and physiological characteristics of the structures precedes.

The author rightly expresses the condition of affairs when he says, "that our treatment of intracranial infection has been too long encrusted in conventionality, and that we are no longer justified in regarding such cases as hopelessly lost, and in remaining with folded hand. . . . That we have replaced the vigorous if inappropriate measures of our predecessors by an equally inappropriate inertia." He emphasizes the more frequent use of lumbar puncture in injury to the brain, in apoplexy, and in traumatic lacerations when the patient passes into the stage of cerebral irritability.



In Lecture II. he discusses very thoroughly the subject of abscesses, their form, situation and clinical evolution.

The book is a good specimen of English printing, and is profusely illustrated. The style is clear and lucid, and an extensive bibliography concludes each lecture.

S. LEOPOLD.

INTRODUCTION PHYSIOLOGIQUE A L'ETUDE DE LA PHILOSOPHIE. Conférences sur la physiologie du système nerveux de l'homme. Par J. Grasset, Professeur de clinique médicale à l'Université de Montpellier. Felix Alcan, Paris.

Grasset is indefatigable. In response to a request of his fellows in the philosophical faculty of the University he has given a course to the students of that faculty which is here brought together in book form. We feel that such students have much occasion to be thankful, for not only does the author possess the sound rudiments of a knowledge of the nervous system which may here be found in compact form, but he has the keener insight into the philosophic perspective of that knowledge, and in its present adaptation to the needs of students of philosophy in general, has given a volume of more than usual interest.

It is not a clinical manual, yet clinical material is richly utilized to "point a moral or adorn a tale."

The work is too diffuse to permit of an extended analysis; it must be read to be appreciated, and when read such appreciation will not be lacking.

JELLIFFE.

## Notes and News

*Preliminary Program of Papers to be read at the Meeting of the American Neurological Association to be held in New York, May 27, 28 and 29.*—Thrombosis of the Cervical Anterior Median Spinal Artery; Syphilitic Acute Anterior Poliomyelitis, Dr. William G. Spiller, of Philadelphia; The Surgical Treatment of Athetosis and Spasticities by Muscle Group Isolation, Dr. Sidney I. Schwab, of St. Louis; Report of a Case (With Exhibition of Patient) of Gunshot Wound of the Brain, Without Focal Symptoms, Dr. Wm. M. Leszynsky, of New York; Observation on the Localization of the Stereognostic Sense, and the Sense of Position, Dr. H. H. Hoppe, of Cincinnati; Pain in Tabes Dorsalis, an Important Differential Diagnostic Point, Dr. E. D. Fisher, of New York; The Pathogenesis of Tabetic Arthropathy Based upon the Anatomical and Histological Study of Two Cases, Dr. Alfred Gordon, of Philadelphia; Inversion and Interlacing of the Color Fields, an Early Symptom of Brain Tumor, Dr. Harvey Cushing, of Baltimore; Remarks on Spinal Cord Tumors, Dr. Pearce Bailey, of New York; Mongolian Idiocy, Dr. William N. Bullard, of Boston; The Type and Distribution of Sensory Disturbances Following Cerebral Lesion, Dr. Carl D. Camp, of Ann Arbor; Lantern Exhibition Illustrating Interesting Pathological Conditions, Dr. Allen M. Starr, of New York; Pseudomembranous Internal Pachymeningitis, Report of Four Cases, Dr. D. J. McCarthy and Dr. W. W. Hawke, of Philadelphia;

Two Cases of Tumor of the Pons, Dr. Philip Zenner, of Cincinnati; Unilateral Ocular Spasm, or Epilepsy, Dr. William P. Spratling, of Baltimore; Laminectomy of Postsyphilitic Nerve Root Pain, Dr. Frank R. Fry and Dr. Sidney I. Schwab, of St. Louis; A Study of Errors in the Diagram of General Paresis, Dr. E. E. Southard, of Boston; Horizontal Oscillation of the Eyeball in Bell's Palsy, Dr. L. Pierce Clark and Dr. H. H. Tyson, of New York; The Organic Basis of Emotional Expression, Illustrated by Cases of Involuntary Laughing and Weeping, Dr. Charles K. Mills, of Philadelphia; Groups of Neurohistological Studies and Topics of Brain Pathology, Dr. Adolf Meyer of New York; Clinical Report of a Case of Sarcoma of the Motor Area of the Left Hemisphere, Dr. C. Eugene Riggs, of St. Paul; Differential Diagnosis Between the Psychoneuroses Not Always Necessary, Dr. George L. Walton of Boston; Pellagra With Report of Eight Cases, Dr. Eugene D. Bondurant of Mobile; Presentation of a Case of Syringomyelia, Dr. J. Arthur Booth of New York; Tumor of the Left Frontal Lobe With Hemorrhage into the Ventricles, Dr. J. Arthur Booth of New York; A Case of Subcortical Auditory Aphasia With Description of the Anatomical Lesion, Dr. Albert M. Barrett of Ann Arbor; The Reflexes in Hysteria, Dr. Philip C. Knapp of Boston; Cyst Formation—An Unusual Effect of Intracranial Pressure, Dr. E. W. Taylor of Boston; Motor Aphasia Without Lesion of the Third Frontal Convolution, Dr. F. X. Dercum of Philadelphia; A Case of Primary Degeneration of the Pons, Cerebral Peduncles, Medulla and to a Less Extent of the Cerebellum, Associated With Primary Degeneration of the Cortico-Spinal Tracts, Dr. J. H. Weisenburg, and Dr. S. D. Ingham of Philadelphia; Distribution of Encephalic Hemorrhage, Dr. S. D. N. Ludlum of Philadelphia; How Should the Paroccipital Tissue be Represented in Fissural Diagrams? Dr. B. G. Wilder of Ithaca; Occupation Neuritis of the Thenar Branch of the Median Nerve, Dr. J. Ramsay Hunt of New York; Herpes Zoster Oticus, Dr. J. Ramsay Hunt of New York; Hereditary Spastic Paraplegia, Dr. John Punton of Kansas City; Dreams and their Interpretations as Diagnostic and Therapeutic Aids in Psychopathology, Dr. B. Onuf of New York; The Danger of Sub-Temporal Decompression in Cerebellar Tumors, Dr. Hoppe, of Cincinnati.

*Government Hospital for the Insane.*—Examinations will be held, on June 16 next, of applicants for the post of interne at the Government Hospital for the Insane at Washington, D. C. At least two vacancies to be filled, at \$600 each. Application for information should be made to the United States Civil Service Commission, Washington, D. C.

*American Medico-Psychological Society.*—The annual meeting of this society, erroneously announced last month for May 12-15 at Cincinnati, will be held this year at *Atlantic City, N. J., on June 1-4, 1909*. A very interesting programme will be presented.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### THE SENSORY SYSTEM OF THE FACIAL NERVE AND ITS SYMPTOMATOLOGY<sup>1</sup>

BY J. RAMSAY HUNT, M.D.

NEW YORK CITY

The subject which I have chosen for presentation this evening is the symptomatology of the sensory system of the seventh cranial nerve.

A preliminary statement of my views on this question was made before the American Neurological Association in 1907 (1); and certain special aspects of the same subject I have considered in previous communications, the "Herpetic Inflammations of the Geniculate Ganglion" (2) and "Otalgia Considered as an Affection of the Seventh Cranial Nerve" (3).

As an introductory statement I would emphasize the fact, that anatomically speaking the seventh nerve has long been recognized as a mixed nerve, having a sensory root and ganglion.

The investigations of Retzius (4), W. His (5), v. Lenhossek (6), Penzo (7), Sappolini (8), Van Gehuchten (9), and Dixon (10) have shown conclusively that the facial has a sensory ganglion the geniculate, a sensory root the pars intermedia of Wrisberg, as well as sensory fibers coursing in the chorda tympani, the great superficial petrosal nerve and the trunk proper of the seventh.

Modern authorities are agreed as to the nature and origin of the nerve of Wrisberg and the chorda tympani, opinions differ

<sup>1</sup> Presidential Address delivered before the New York Neurological Society, February 2, 1909.

however as to the nature, cause and derivation of the petrosal nerves. In my address this evening I shall outline the sensory development of the seventh nerve from a clinical standpoint and will attempt to give this system a definite and established group of sensory functions.

My attention was first directed to this subject by the study of certain forms of herpes zoster oticus, a distribution of herpes zoster which I referred to the geniculate ganglion of the facial nerve (Fig. 1). The herpetic pains associated with this condition



FIG. 1. Section through the intumescentia ganglioformis of the facial nerve showing the cells of the geniculate ganglion. (Weigert-Pal Method.)

were quite circumscribed and were definitely localized in the depths of the ear, the auditory canal and the mastoid region (the herpetic otalgia); and served to indicate the relation of the sensory facial to pain in the auditory mechanism (the otalgias). By this clinical method it was also possible to outline the zoster zone for the geniculate ganglion, which occupies an irregularly cone-shaped area on the auricle; the apex of which is represented by the tympanic membrane, the walls of the auditory canal, and the base by the concha, tragus, antitragus, anthelix and an adjacent marginal area.

Embryological methods had already shown the mixed nature of the facial nerve, its sensory system springing from the neural ridge, which also gives rise to the spinal ganglionic chain; furthermore anatomical studies in the lower vertebrate forms had shown the existence of a seventh nerve in which the sensory system was equal in importance to its motor, but which in the course of phylogenic development had undergone a very considerable shrinkage and diminution in importance, as it was replaced by the trigeminus. In man the sensory system is still concerned in the innervation of certain structures of the auditory mechanism, and a vestigial remnant still persists within the buccal cavity; and it is to the general sensory functions of this system which I shall ask your attention this evening.

The subject matter of my paper may be conveniently grouped under the following headings:

- I. Historical résumé of sensory symptoms in facial palsy.
  - (a) Pain in facial neuritis.
  - (b) Anesthesia in facial palsy.
- II. Anatomical considerations bearing on the sensory system of the seventh nerve.
- III. The sensory symptoms and syndromes of the seventh nerve.
  - (a) Herpetic inflammations of the geniculate ganglion and its complications.
  - (b) Neuralgia of the seventh nerve (otalgia).
  - (c) Pain and sensory disturbances in facial neuritis.
  - (d) Facial spasms, twitchings and their etiological relation to the sensory system of the seventh.
- IV. A scheme for the revision of the anatomical nomenclature of the seventh nerve.

#### HISTORICAL RÉSUMÉ

As a proper introduction to this subject I shall recall some of the historical points of interest in connection with the symptomatology of the facial nerve, and more particularly those facts bearing on its sensory development.

To Sir Charles Bell, the eminent English anatomist and surgeon, is due the credit of first bringing into clinical prominence the facial nerve. Long before his time, however, the course of

the nerve and its anatomical relations were well known; and the origin in the medulla, circuitous path in the petrous bone and ramification on the face were described by the older anatomists.

Mangeti's (11) anatomy, published in the early part of the seventeenth century contains an admirable plate by Bartholomeus Eustachius showing the course of the nerve as we know it to-day, in which its ramifications on the face are clearly indicated and differentiated from those of the trigeminus. The differentiation of the terminal divisions of the fifth and seventh nerves at this period and up to the time of Bell, was not functional but merely an anatomical distinction; and it was not until the results of his epoch-making discoveries were reported to the Royal Philosophical Society (12) that the motor function of this nerve was clearly separated from the sensory function of the fifth.

It is not my purpose to discuss in detail these brilliant investigations, but it is of interest to note in passing that the earliest and most conclusive experiments made by Bell, and which later enabled him to separate the motor from the sensory roots of the cerebro-spinal system, were those carried out on the facial and trifacial nerves.

Bell's investigations, however, did not cease with his anatomical and experimental work, but were supplemented by very careful clinical studies of facial palsy, in which he elaborated this subject to an astonishing degree; recognizing most of the common etiological factors which we teach to-day, and also giving the points of differential diagnosis between facial palsies of central and those of peripheral origin.

In a description of one of his cases is the following statement, bearing on the involvement of the upper branch of the nerve in peripheral palsy (13).

"The patient could close the eyelid of the paralyzed side as well as the other, and when his nerve was stimulated by the harts-horn, or when he lifted the orbicularis oculi, the corrugator supercilii was in complete action, so that there was not here that heaviness of the upper part of the face so remarkable in paralytic cases. Here then is proof that those actions of the eyebrows which are found to be deficient when the portio dura is affected, are in the case of common palsy left entire."

In another case he writes: "Many instances will now occur to my readers of cases of paralysis of the face consequent upon a

local affection of the portio dura, which have been mistaken for an attack of apoplexy and the patient treated accordingly. In one case the patient having undergone the discipline of bleeding, purging and starving, and after having his head shaved and blistered, was suddenly cured by the bursting of an abscess in the ear."

Anatomically, Bell recognized the branch to the ossicles, the chorda tympani and its relations to the lingual branch of the fifth, the great superficial petrosal (Vidian nerve), the posterior auricular branch as the trunk emerges from the stylo-mastoid foramen and the peripheral distribution on the face. But as I have already indicated these bare anatomical facts had long been known to the older students of anatomy.

Since the time that facial palsy was shown to be dependent upon a lesion of the facial nerve, this structure has, for all practical purposes, been regarded clinically as a motor nerve. From time to time an occasional sensory symptom has attracted attention, but such sensory manifestations have been referred to one of the many neighboring sensory systems which converge and anastomose in this region.

In the present communication I shall not consider the mooted question of the central path of the fibers of the chorda tympani. The peripheral course and their origin in the cells of the geniculate ganglion have been definitely established, and the latest investigations also tend to show that the central path of these fibers is through the pars intermedia of Wrisberg. The facial has also important splanchnic functions, conveying vaso-motor and secretory impulses to the skin of the face, the lachrymal and salivary glands.

I will now pass to a consideration of various sensory symptoms which antedated my own investigations in this field.

*Pain in Facial Palsy.*—One of the first, if not the first, systematic study of a sensory symptom in facial paralysis was made by Dr. S. G. Webber (14), of Boston, in a paper entitled "Pain as a Symptom of Facial Paralysis and its Cause," published in the *Boston Medical and Surgical Journal* of December, 1876. In it is contained a careful description of the pain phenomena observed in six cases of facial palsy; the character of which was accurately described as well as its duration and area of distribution. The pain was localized in the ear and the mastoid region,

in some cases radiating to the face and occiput. Webber ascribed the pains to involvement of the peripheral filaments of the trigemini nerve, and of the auricular branch of the vagus as it crosses the trunk of the facial in the lower portion of the Fallopiian canal. He also suggested the possibility of recurrent sensory fibers of trigeminal origin passing backwards to the facial through the Vidian or greater superficial petrosal nerve.

Ten years later pain in facial palsy was made the subject of a thesis by Testaz, entitled "*Paralysie douloureuse de la septieme paire*" (15). Testaz collected reports of fifteen cases, in all but two of which pain was present. The pain as in Webber's original description was localized chiefly in the region of the ear and mastoid, which sometimes radiated to the face and occiput. He likened it in character to the pain of sciatica, and from its duration and severity, attempted to formulate a method of prognosis as to the severity of the paralysis. A *benign* form was recognized in which the pain preceded the palsy by a few hours up to one day, and a *severe* form in which several days or a week of pain elapsed before the appearance of the palsy.

Testaz, like Webber, referred the pain to neighboring sensory nerves. In all subsequent monographs treating of facial palsy the frequent occurrence of pain has found mention and its presence has been explained by a coincident involvement of adjacent sensory systems.

*Anesthesia in Facial Palsy.*—Besides the subjective symptom—pain—various types of objective sensory disturbances have been observed in the course of facial palsy.

In 1891, Frankl-Hochwart (16) directed attention to a peculiar form of sensory disturbance in facial paralysis. This consisted in a diminished sensibility of the entire face on the paralyzed side, in some cases including the tongue and mucous membrane. Sensation was not lost in this group of cases, but was merely diminished or obtunded in the area involved; it was of very short duration, and was present in eight of the twenty cases reported. He suggested that a coincident involvement of the terminals of the trigemini nerve might be the underlying cause, but thought it also probable that the seventh nerve conveyed sensory fibers to the face. Here then was an attempt to attach a definite sensory function to the seventh nerve, but the very nature of the sensory distribution renders such a theory



hardly tenable; for it would be difficult to conceive of sensory fibers passing to the face in such numbers and so evenly distributed as to cause a uniform hypesthesia of the entire paralyzed area including the mucous membrane and the tongue, and even less so, as the phenomenon is not frequent.

Donath (17) in a recent contribution to this subject, based on a series of forty-three cases, found the hypesthesia of the face as described by Frankl-Hochwart in twenty cases. In fifteen of these, however, the diminished sensibility was not confined to the face alone but included the whole half of the body as well; it was therefore a hemi-hypesthesia, and as such could not be referred to the facial nerve. He recalls the normal physiological difference in the acuity of perception on the two sides of the body, and suggests this as a possible explanation.

It is also well known that hysterical hemi-hypesthesia in suggestible subjects is by no means rare. In the five remaining cases in which the sensory disturbance was confined to the face he regards it as a trigeminal manifestation, and probably due to coincident involvement of its terminals.

In order to show the variability and relative frequency of this symptom, Koster's (18) series of forty-one cases may be mentioned in which facial hypesthesia was absent; also Schieber's (19) series of fifty-six cases in which it was present in twenty-eight. Remak and Flatau (20) in a series of two hundred cases state that no sensory disturbances were found excepting in those cases complicated by herpes zoster, or hysteria.

Gowers (21) disposes of this type of hypesthesias of the face in the following manner: "Sensation in the face is generally unaffected, but I have several times in early and severe cases noted a very slight diminution in the sensitiveness of the skin especially on the cheek; the cause may be an alteration in the function of the nucleus of the fifth nerve due to the diminution of the impressions that are normally produced by muscular action. This is more probable than that the facial nerve sometimes conveys sensory fibers to the skin."

I may add that in thirty cases of facial palsy which I have examined personally for disturbances of sensation, this form of hypesthesia was present in only two. In these two cases the slightest touch upon the affected side was promptly perceived and it was only by careful comparison with the non-paralyzed

side that any difference became apparent in the acuity of sensibility. This was also true of the pain and temperature sense. And in my opinion a disturbance of this character, not hysterical, finds a more logical explanation in the functional theories of Gowers and Donath.

Another form of sensory disturbance is that described by Gowers (21), which consists of an area of hypesthesia in the concha of the ear. Gowers's description reads as follows:

"I have occasionally found in early cases an area of anesthesia on the front and back of the concha in the region of skin supplied by a nerve given off by the facial as it emerges, and which is probably derived from the fifth nerve." Here again, true to the tradition that the seventh nerve is a motor nerve, an adjacent sensory nerve, the trigeminus, is sought to explain the area of anesthesia. This particular area, it will be observed, lies within the zoster zone as outlined in my studies of herpes zoster oticus and represents the sensory distribution of the seventh nerve in the ear.

*Hypesthesia in the Trigeminal Area of the Tongue in Facial Paralysis.*—Another form of objective sensory disturbance was noted as early as 1876 by Bernhardt (22), which consisted of a hypesthesia of the tongue in the trigeminal area. This symptom is of rare occurrence but has been confirmed from time to time. In Schieber's series of fifty-eight cases it was observed but once. Koster found it absent in twenty-seven cases. In one hundred and thirty cases reported from Mendel's clinic (23) it was mentioned in only three. The rarity of this symptom may be more apparent than real as the disturbance of sensibility is very slight and requires care to demonstrate its presence. Furthermore, subjective and objective disturbance of the taste sensation may hamper its proper demonstration.

In connection with this form of sensory disturbance, Harvey Cushing (24) has made an interesting observation in his elaborate and most conclusive study of the trigeminal field after Gasserian ganglion extirpation. Cushing found that while there is anesthesia to touch, pain and temperature on the anterior two-thirds of the tongue after ganglion extirpation, a crude sort of sensation still persists and which therefore cannot be ascribed to the trigeminus. As the chorda tympani is also distributed in this region, it is fair to assume that the mild preservation of tactile

sense is due to the presence of sensory fibers in the chorda. This theory is still further strengthened by one of his cases, in which after an extirpation of the Gasserian ganglion, a facial palsy supervened. Before the onset of the palsy and after the removal of the ganglion, a cotton swab swept over the anesthetic trigeminal area was distinctly felt and gave rise to a crude sort of sensation. This slight persisting sensibility vanished with the appearance of the facial palsy, which would indicate the presence of general sensory fibers in the chorda of facial origin.

Another group of cases has sometimes been cited in support of the theory that the seventh nerve may carry sensory fibers to the face. (J. K. Mitchell (25).) I refer to certain abnormalities in the area of anesthesia after section of one or more branches of the trigeminus. In some instances the resulting area of anesthesia has been so irregular or so transitory as to awaken the suspicion that some other sensory system also participated in this innervation. These cases are uncommon, and are not confirmed by the studies of the field of anesthesia in the total ganglion extirpations. When they do occur, a more satisfactory explanation would be physiological variation and overlap or a restoration of function by regenerative processes.

Spiller (26) also observed after extirpation of the Gasserian ganglion in certain cases that a distinct pressure sense was preserved in the anesthetic area, in which all other forms of sensation were lost. Ivy and Johnson (27) confirmed this observation; and in a case of Gasserian ganglion extirpation found that light touch, pain and temperature sensations were lost in the trigeminal area, but that deep pressure sensations were retained, a manifestation which might lead one to infer that the removal of the ganglion had been only partially successful.

Following the hypothesis of Henry Head that the motor nerves convey sensory fibers to the muscles and tendons (deep sensibility); they ascribe this preservation of the pressure sense to the presence of such fibers in the motor filaments of the facial.

This brief sketch outlines in a general way the various disturbances of a sensory nature which have been described in the course of the clinical development of the facial nerve, *i. e.*, the pain of facial neuritis, the hypesthesias of the face and mucous membrane, the area of anesthesia in the concha and the slight hypesthesia in the chorda tympani distribution of the tongue.

Notwithstanding the occurrence of these sensory symptoms and the various proofs furnished by embryology and anatomy of the mixed character of the seventh cranial nerve, no systematic attempt has been made to attach to this system a general sensory function. On the contrary, these symptoms and others of a similar sensory character, have been assigned to sensory systems of adjacent nerves.

As an introduction to my own views on this subject, I will refer briefly to the anatomy of this region and the recent accessions to our knowledge of the seventh nerve; and having outlined the probable extent and distribution of the sensory facial, I will proceed to a discussion of its general sensory functions and symptoms.

#### ANATOMICAL CONSIDERATIONS

It may be asserted as a definitely established fact that the facial is a mixed nerve, having the same morphological and developmental significance as the other mixed cranial nerves; the trigeminus, glosso-pharyngeal and the vagus. In common with these nerves, it possesses a ganglion composed of unipolar cells; the central processes of which terminate in the *fasciculus solitarius* of the medulla, in the same manner as do the central processes of the ninth and tenth nerves. These central fibers constitute the sensory root of the seventh nerve and grouped together form the *pars intermedia* of Wrisberg. On the distal side of the ganglion the intermediate fibers are supposed to be continuous with the chorda tympani and as such are associated with the special sense of taste on the anterior two-thirds of the tongue.

Sappolini at one time attempted to establish a separate system composed of the nerve of Wrisberg, the geniculate ganglion and the chorda tympani, and this has sometimes been termed the thirteenth cranial nerve of Sappolini; but the fusion of the chorda fibers with the motor trunk of the facial does not permit of such a morphological separation, and the thirteenth cranial nerve has not been accepted by anatomical writers.

The facial in its course through the Fallopiian aqueduct, that is, from the level of the geniculate ganglion to its exit at the stylo-mastoid foramen, gives off numerous collateral branches. The functions of some of these branches, more particularly of the

motor branches and the chorda tympani, are well known; of others the views are conflicting and unsatisfactory.

These branches I will now take up in the order of their origin, with remarks upon their probable sensory functions.

From the geniculate ganglion itself there arise two branches which are called the great and small superficial petrosal nerves; these pass through separate bony foramina and terminate in important ganglia of the cerebral sympathetic system (Meckel's ganglion and the otic ganglion). Both of these petrosal nerves

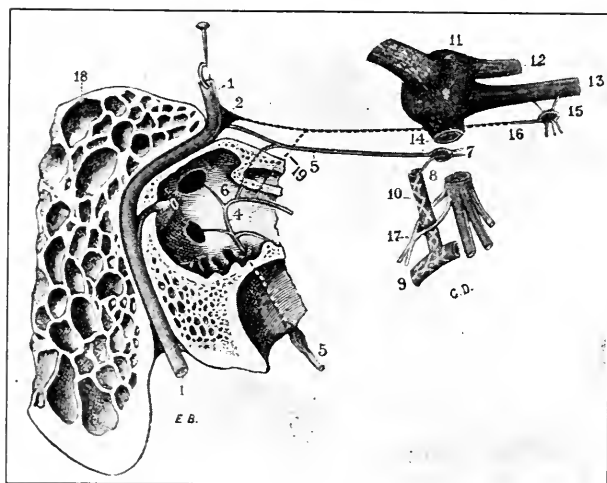


FIG. 2. (Testut's Anatomy.) Showing the facial nerve, geniculate ganglion and the petrosal nerves. 1, Facial nerve; 2, Geniculate ganglion; 3, Glosso pharyngeal, and 4, Jacobson's nerve; 5, Small superficial petrosal nerve; 6, Small deep petrosal nerve; 7, Otic ganglion, and 8, its sympathetic root; 9, Internal maxillary artery; 10, middle meningeal artery; 11, Gasserian ganglion and its three branches; 12, Ophthalmic; 13, Superior maxillary; 14, Inferior maxillary; 15, Spheno-palatine ganglion (Merkel's); 16, Great superficial petrosal or Vidian nerve; 19, Great deep petrosal nerve; 18, Mastoid cells; 17, Auriculo-temporal branch of Fifth.

give off in their course descending branches which take part in the formation of the tympanic plexus; these descending branches are called the great and small deep petrosal nerves. (Fig. 2.)

Many diverse and conflicting functions have been assigned to the petrosal nerves. They are supposed by some writers to transmit the fibers of the chorda tympani from the geniculate to the trigeminus nerve; by others to convey motor impulses from the facial to the spheno-maxillary region, and retrograde sensory

fibers from the trigeminus backwards to the facial as well. Some of these functions have already been disproved and abandoned, and others have no definite proof and are purely theoretical. Cushing (28) in his studies of the trigeminal field of anesthesia after Gasserian ganglion extirpation has shown conclusively that the chorda fibers do not pass to the brain in the trigeminus as was originally held. Furthermore, the supposed motor function of the great superficial petrosal nerve (Vidian nerve) in its relation to the levator palati muscles was disproved by Rethi, who has shown that this function is subserved by the vagus. Furthermore, there is neither clinical nor embryological evidence to show that fibers of common sensation pass from the fifth to the seventh nerve by the petrosal branches.

Dixon (29) has clearly demonstrated the sensory nature of the Vidian or great superficial petrosal nerve and its developmental relation to the cells of the geniculate ganglion. The small superficial petrosal likewise takes its origin from the geniculate ganglion, sends a descending branch to the tympanic plexus and terminates in the otic ganglion of the cerebral sympathetic system; the sensory nature of which is not less evident.

The facial nerve proper which courses within the Fallopian aqueduct, in addition to motor chorda fibers, contains a certain number of sensory fibers as well, which spring from the cells of the geniculate ganglion. The presence of such sensory fibers in the facial trunk having been demonstrated experimentally by Amabolino. These experiments consisted in cutting the nerve at its exit from the stylo-mastoid foramen, and studying the retrograde degenerations in the cells of the geniculate ganglion; another proof that these cells have a common sensory function apart from those subserving the function of taste. These sensory fibers in the trunk are destined for the cutaneous distribution of the facial on the external ear (zoster zone of the geniculate). Furthermore, it has been shown that the chorda tympani in some cases gives off a small branch to the tympanic plexus and we have already learned from the hypesthesia of the tongue in facial palsies that the chorda conveys common sensory fibers to this distribution as well. In this connection it is also worthy of mention that the lingual branch of the facial which innervates the stylo-glossus and palato-glossus muscles at the base of the tongue, also sends mucous filaments to the anterior

pillar of the fauces and the adjacent region. And while it is true that the lingual has an anastomosis with the glosso-pharyngeal nerve, there is no proof that these filaments to the mucous membrane are not part of the sensory facial system, although I have not yet been able to demonstrate clinically anesthesia in this area.

The sensory distribution of the facial to the tongue, fauces (?), and tympanic cavity, with its prolongation into the eustachian tube and mastoid cells, represents the remnants of what in the lower vertebrates is a very considerable sensory distribution to the vault of the palate, tongue, and floor of the mouth

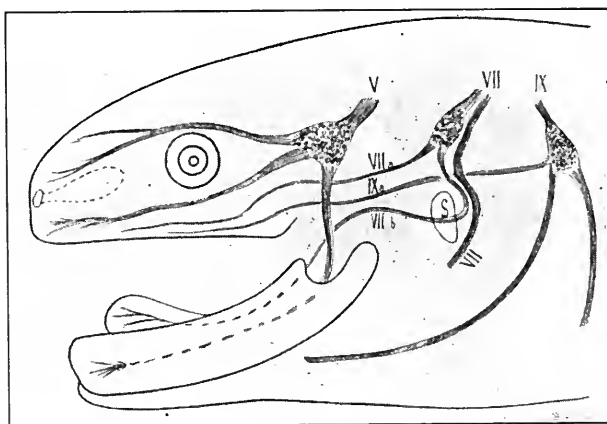


FIG. 3. Showing the distribution of the Cranial nerves in the lower vertebrate forms (Wiedersheim).

(Fig. 3). This at one-time important sensory distribution has in the course of phylogenic development undergone a considerable shrinkage and displacement by the trigeminus. A vestigial remnant in the mouth is still demonstrable, and an important sensory innervation of facial origin still exists in the middle ear and its prolongation and on the external ear.

I have not given in detail the entire array of facts, clinical and anatomical, on which my conclusions are based, but have merely outlined in a general way the results of the more recent investigations. Supported by these facts I would regard the sensory distribution of the facial to be as follows: To the tympanic cavity and its prolongations into the mastoid and eusta-

chian tube by the petrosal nerves; a vestigial innervation to the tongue and tonsillar region through the chorda tympani and lingual (?) branches, and a cutaneous innervation in the interior of the auricle by fibers which pass out with the trunk, some of which probably reach their destination through the posterior auricular branch of the seventh (Valentin (30)).<sup>2</sup> (Fig. 4.)

Our present anatomical nomenclature of this region is so

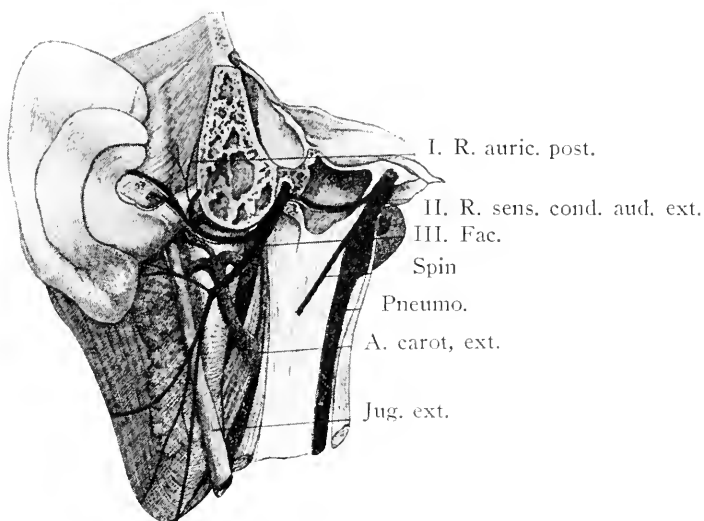


FIG. 4. (Poirier et Charpy.) A posterior view of the facial nerve at its exit from the stylo-mastoid foramen (III), showing the posterior auricular branch of the Seventh (I) and the auricular branch of the vagus (II) as it transveres the Fallopian aqueduct.

very perplexing and confusing that a revision of some sort would seem justified from the clinical standpoint. The one which has suggested itself to me, while perhaps, not satisfactory for anatomical descriptions would, at least, simplify the matter for clinical purposes, and would unite in a practical way the sensory and motor systems of the seventh nerve and its connections with the central sympathetic. With this end in view I would regard the motor and sensory systems of the facial as a single nerve, the seventh cranial nerve, having a ganglion (the geniculate) and two roots (motor and sensory). The motor root is the facial nerve proper to the point of its fusion with the gan-

<sup>2</sup> Valentin has described cutaneous filaments to the auricle, from the ascending and horizontal branches of the posterior auricular branch of the facial.



gion; the sensory root is the so-called *pars intermedia* of Wrisberg. In this respect it is the homologue of the fifth nerve with its Gasserian ganglion, sensory and motor roots. On the distal or peripheral side of the ganglion, at which point there is a fusion of the motor and sensory roots, I would divide the facial system into three principal branches. This would not only simplify the nomenclature of this region, but would give to the sensory facial the importance which it deserves. It is also justified by anatomical distribution, the facial system breaking up into these divisions at the geniculate level, all of which are quite separate in their course and distribution.

The first branch of the seventh nerve on the distal side of the ganglion is the great superficial petrosal which emerges from the tip of the geniculate, passes through the hiatus Fallopii and terminates in Meckel's ganglion which is attached to the second division of the fifth. In its course it gives off the descending branch to the tympanic cavity and enters into the formation of the tympanic plexus. The first branch then connecting the geniculate ganglion with the middle ear, and with the sphenopalatine ganglion of the cranial sympathetic system, constituting its *ramus communicans*. This branch of the facial system stands in relation with the superior maxillary or second division of the fifth, and has important reflex functions (reflex otalgia). (Fig. 2.)

The second branch of the seventh is the small superficial petrosal nerve, takes its origin from the lower portion of the geniculate ganglion, enters a separate bony canal and terminates in the otic ganglion of the cerebral sympathetic system which is attached to the third division of the fifth. Like the great superficial petrosal it gives off in its course a descending branch to the tympanic cavity which enters into the formation of the tympanic plexus.

The second branch then connects the geniculate with the middle ear and with the cerebral sympathetic constituting its *ramus communicans*, and has important reflex functions from the connection with the third division of the fifth (reflex otalgia).<sup>3</sup> (Fig. 2.)

<sup>3</sup> It is possible that both of these petrosal branches may carry motor fibers from the facial to the sphenomaxillary region as well, but this is merely speculative and has not been established.

The third branch of the seventh is the classical motor nerve as it passes through the Fallopian aqueduct. Around this branch is grouped the well established symptomatology of Bell's palsy. This branch contains motor fibers proper, the chorda tympani branch to the tongue and sensory fibers which emerge at the stylo-mastoid foramen for distribution on the auricle. (The zoster zone of the geniculate.)

In such a reconstruction of the facial system into sensory and motor roots, ganglion and three peripheral branches, the first and second divisions bring the geniculate into relation with the

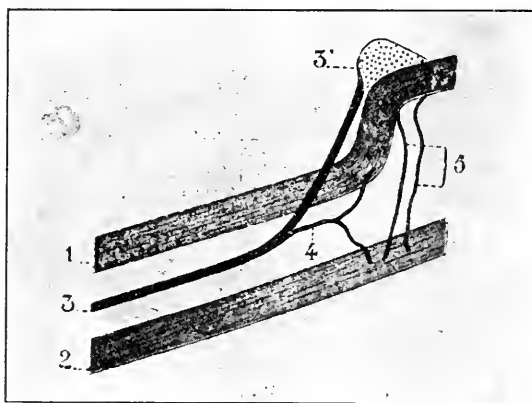


FIG. 5. Anastomoses of the facial and auditory nerves. 1, facial; 2, auditory; 3, nerve of Wrisberg; 3', geniculate ganglion; 4, internal anastomoses; 5, external anastomoses. (Testut.)

middle ear and the cerebral sympathetic system and into reflex relationship with the trigeminus, and furnishes an anatomical basis for reflex ear pains, or otalgias, following deep-seated ulcerations in naso-pharynx and buccal cavity.

The third division, in addition to its motor and taste functions, conveys sensory fibers to the tongue, to the auricle, and possibly to the region of the tonsil through the lingual branch. I would also emphasize the presence of certain anastomotic branches which pass between the geniculate ganglion, the nerve of Wrisberg and the auditory nerve in the depths of the internal auditory canal. The function of these anastomoses is unknown, but their sensory character, and their origin in cells of the geniculate ganglion is generally accepted, and it is very probable that

they represent a sensory innervation of the auditory nerve (internal ear?).<sup>4</sup> (Fig. 5.)

I have refrained in these general anatomical considerations from any elaborate enumeration of the facts furnished by embryology and anatomy, which support my views on the sensory system of the facial. There is, however, one series of investigations which I would mention in its relation to the cell function of the geniculate ganglion. As I have previously remarked, the fibers of the chorda tympani originate in these cells and according to very good authority pass in the nerve of Wrisberg to the medulla; so that a part of the function of this ganglion must be concerned with the sense of taste; but that this is not the sole sensory function of this structure has been demonstrated by the histological investigations of W. His, Jr. (32). His counted the fibers in the chorda tympani and the ganglion cells in the geniculate of a 22 mm. human embryo. By actual count it was ascertained that while the chorda contained about one hundred and twenty fibers there were seven to eight hundred ganglion cells; the sensory functions of these other cells are unknown. If one considers as well that cells and groups of cells of exactly the same type are to be found scattered along the entire length of the nerve of Wrisberg, the petrosal nerves and the trunk of the facial itself, it must be admitted that there exists a very considerable sensory system belonging to the seventh nerve, which is not concerned with the sense of taste and which probably subserves the other general sensory functions of this nerve.

That the function of this sensory mechanism should so long have escaped detection is not surprising. We had to do with a small ganglionic system intercalated between the large system of the trigeminus in front and the systems of the glosso-pharyngeal and vagus behind. As a result there were numerous anastomoses of which it was very difficult to determine their motor or sensory nature and their proper ganglionic origin. The subject was still further complicated by the intricate relations of the facial system to the highly specialized structures of the auditory mechanism. Indeed it is only to the study of the simple

<sup>4</sup> Erlitki (31) has suggested that certain cells and groups of cells found in the course of the auditory nerve near its termination send their central processes to the nerve of Wrisberg.

structural types of lower vertebrate forms that we owe our present knowledge of the mixed nature of the seventh nerve and its relation to the first branchial or ear cleft.

That its distribution on the auricle was not recognized is also easily understood. The area is small and because of its situation in the auricular folds and the canal is difficult of access. Furthermore, the concentration of the auricular branches of the fifth, ninth, tenth and upper cervical nerves in the same region still further complicated matters, so that a small area of anesthesia in this region would rapidly fade in the overlapping of adjacent marginal areas. (As we have already seen Gowers demonstrated such an anesthesia in early and severe cases of facial paralysis, but referred it to the trigeminus.)

With these obstacles to overcome the importance of the herpes zoster method as a means of determining its ganglionic representation requires no emphasis. The importance of this method has already been demonstrated in the spinal ganglia (Head and Campbell (33)), and how much greater would be its significance in the case of the geniculate; a small ganglion of unknown representation in which the cutaneous distribution was small, difficult of access and of demarcation by the usual anesthetic methods.

#### SENSORY SYMPTOMS AND SYNDROMES OF THE SEVENTH NERVE

(a) *Herpetic Inflammations of the Geniculate Ganglion. (Herpes Oticus.)*—In the historical summary I have already enumerated various sensory symptoms in facial palsy, which have accumulated during the past few years. In the anatomical résumé I have shown the existence of a sensory mechanism in the seventh nerve entirely apart from that concerned with the special sense of taste, and have indicated its probable range of distribution, *i. e.*, the auditory nerve and its terminations, in the internal ear; the tympanic cavity and its prolongations into the mastoid cells and eustachian tube; the interior of the auricle and vestigial remnant on the tongue.

I shall now proceed to an elaboration of the sensory symptomatology, and will begin with the herpetic inflammations of the geniculate ganglion. As I have already treated this subject at length in other communications (34), I shall simply outline the symptomatology in order to give completeness to my remarks.

The geniculate, like other ganglia of the spinal type, originating as outgrowths of the neural ridge, may be the seat of the specific inflammation of herpes zoster, the *herpes oticus*. Like the other sensory symptoms of facial origin, the herpes oticus had been referred to the neighboring systems of the trigeminus and the upper cervical nerves.

In herpetic inflammation of the geniculate, with the general symptoms of zona there is pain, localized in the depths of the ear, auditory canal and mastoid region (herpetic otalgia).

Following the pain there appears the characteristic eruption of zoster which is distributed in the canal or on the external surface of the auricle.

The zoster zone for the geniculate is not as yet definitely outlined, but it lies within a cone-shaped area, represented by the tympanic membrane, the walls of the auditory canal, external meatus, concha, tragus, antitragus and antihelix.<sup>5</sup>

In one of my cases belonging to this group in which histological studies were made, well marked degenerative changes were found in the intra and extra medullary portions of the sensory root of the seventh, the nerve of Wrisberg.

Herpes oticus is not, however, the only manifestation of geniculate inflammation, but from the close proximity of the facial and the auditory nerves, these structures may be involved, which lends a special interest to this localization of the disease. So that with the herpes oticus there may be facial paralysis and symptoms referable to the acoustic nerve. In severe cases the auditory complication may give rise to the typical symptoms of Ménière's disease; vertigo, vomiting, nystagmus, disturbances of equilibrium, tinnitus aurium and deafness (herpes oticus with facial paralysis and auditory symptoms).

Another group of cases must also be mentioned in which the same neural complications (seventh and eighth nerves) occur with herpes zoster of the face and neck (herpes zoster facialis and occipito collaris).

This group of cases may be explained by the tendency of the

<sup>5</sup>The vagus and gloss-pharyngeal ganglia both have a representation within this area as well. I have seen two cases in which the eruption was distributed posteriorly in the cleft between the auricle and the mastoid process, in the distribution of the posterior auricular branch, so that there is probably considerable variation in the ganglionic representations (zoster zones) of the seventh, ninth and tenth nerves in the region of the auricle.

specific toxin of zona to produce inflammatory reactions in a series of ganglia, although the chief or *eruptive focus* is confined to a single ganglion.

In this manner the geniculate may be the seat of an inflammatory reaction when the eruptive focus is in the Gasserian or upper cervical ganglion, which may extend to the adjacent seventh and eighth nerves (herpes facialis and herpes occipito collaris with facial palsy and auditory symptoms).

That the geniculate ganglion may be encroached upon from without, and secondarily involved, inducing pains and an eruption of herpes on the auricle is rendered very probable by a case of endothelioma of the petrous bone which came under my observation.<sup>6</sup>

(b) *Neuralgia of the Seventh Nerve (Otalgia (36)).*—In discussing the distribution of the pains following herpetic inflammations of the geniculate, we have seen that they are very definitely localized in the structure of the auditory mechanism (the herpetic otalgia).

In addition to the pain of organic origin there must also be considered a group of pure sensory neuroses of the seventh cranial nerve, under which heading I include certain definite clinical types of otalgia. By otalgia I refer to a large group of cases in which pain is definitely localized in the auditory mechanism, *i. e.*, the depths of the ear, the mastoid region, the canal and on the surface of the auricle. As might be surmised from the highly specialized structure of the auditory mechanism and its exposed situation through the medium of the auditory canal and the eustachian tube, such neuralgic affections are not uncommon. Schwartze gives the proportion of non-inflammatory ear-ache to that of inflammatory origin as 1.8 per cent. Considerable confusion prevails in the grouping of these cases and no very definite or satisfactory anatomical basis has as yet been furnished. The otalgias have been indiscriminately classed as neuralgia of the tympanic plexus, the plexus of the eustachian tube; or if the

<sup>6</sup> It is also very probable that the ganglion of the auditory nerve may be primarily involved in zona. The cells of the ganglion spirale and the ganglia of Scarpi and Boettger take their origin from the neural ridge, from which are developed the ganglion of the spinal type; and although they are morphologically different by reason of retaining their primitive bipolar character, they are genetically the same, and as such probably liable to herpetic inflammations. There is also clinical evidence to support this theory (35).

pain was situated in the auricle it was relegated either to the trigeminus in front or the cervical nerves behind.

While it is true that ear pains may occur as a part of the trifacial or occipito-cervical neuralgia (auricular branches), one can hardly conceive of a pain sharply localized in the auditory mechanism as the sole manifestation of a *tic douloureux* of the fifth, or of the occipito-cervical nerves. The same is true of the glosso-pharyngeal nerve, which while it participates in the innervation of the tympanic cavity (Jacobson's nerve), has an extensive innervation in the region of the tonsil, the palate and upper pharynx. I would therefore particularly emphasize the existence of a well defined clinical type of neuralgia, dependent upon a neurosis of the geniculate ganglion and its system, and which deserves to be ranked with the other time-honored and classical groups of this affection (38).

The sensory system of the facial alone has a circumscribed distribution in the auditory mechanism. That pure otalgia is a sensory manifestation of the geniculate system is still further corroborated by the distribution of the herpetic pains in cases of inflammation of the geniculate ganglion. These pains are very definitely otalgic in their distribution, and in severe cases before the appearance of the eruption, have simulated so closely those of otitis media, that the tympanum has been incised for the relief of this condition. The pains of otalgia are typically neuralgic in character. A very classical description of a case of "*tic douloureux* of the ear" is contained in Nottingham's (37) text-book published in 1857, and which he referred to the trigeminal system.

Furthermore, I believe that cases of this type are much more frequent than might be inferred from a perusal of the literature, and other therapeutic measures failing the advisability of some form of surgical intervention would deserve consideration, similar to the methods employed in the treatment of *tic douloureux* of the face. An intermittent type has also been described with the curious periodic character sometimes observed in supraorbital neuralgia and which responds to quinine.

In addition to the idiopathic and herpetic otalgias, a *reflex* form must also be recognized. In it there occurs a sharply localized pain in the ear as a result of deep-seated ulcerative affections in the buccal cavity and naso-pharynx. Caries of the

teeth is an especially frequent cause. Otolgia occurring as a result of irritative lesions in this region is to be regarded as a referred pain and having the same significance as the visceral referred pains. The naso-pharynx and buccal cavities receive fibers from the large sympathetic ganglia on the second and third divisions of the fifth (Meckel's ganglion and the otic ganglion). Both of these are in direct communication with the geniculate through the superficial petrosal nerves, which may be regarded in the nature of *rami communicantes*, similar to the connections existing between the spinal ganglia and the splanchnic system.

*Tabetic Otolgia.*—In addition to the clinical types already mentioned, I believe that we must also recognize as occurring in the course of tabes dorsalis, lancements in the auditory mechanism dependent upon degenerations in the nerve of Wrisberg (tabetic otalgia). As might be supposed these cases occur more frequently in the cephalic or bulbar types of this disease. In this localization of tabes, degenerations have already been demonstrated in the sensory roots of the fifth, ninth and tenth nerves, but so far as I am aware the nerve of Wrisberg has escaped attention, although it is a sensory root, springing from the cells of the geniculate ganglion.

I have examined a large number of tabetics in order to determine the presence of ear pains which might be referred to the sensory system of the seventh nerve. Up to the present time I have found five cases in which there were sharp lancements like the prick of a needle in the depths of the ear. In all these, the lancements were very sharp and were frequently accompanied by a sudden reflex jerk of the head. In all, organic disease of the ear was excluded. In one of these cases a very advanced tabes of fifteen years duration, I found well marked degenerations in the sensory root of the seventh (nerve of Wrisberg), which shows conclusively that this structure may be involved in the root degenerations of tabes. I would also direct attention to the occurrence of a kind of aural or tympanic *crisis*, and its probable relation to the sensory system of the seventh. These attacks are characterized by sharp lancinating pains in the ear, followed by tinnitus, vertigo and transient disturbance of hearing.



## (c) SENSORY DISTURBANCES IN FACIAL NEURITIS.

As was pointed out in my preliminary remarks, various sensory disturbances have been noted in cases of facial neuritis. I will now discuss this aspect of my subject on the basis of thirty personal cases. By facial neuritis I refer to the common form of Bell's palsy, in which the nerve has been involved in the Fallopian canal between the geniculate ganglion and the stylo-mastoid foramen. This division of the nerve as we have seen is composed of motor fibers, the chorda tympani and sensory filaments destined for the external ear. (The chorda also sends a filament to the tympanic plexus and general sensory fibers to the tongue.)

If this section of the facial becomes the seat of an inflammatory process, the pressure effects would be very much augmented by its confinement within the bony canal and there would, if the sensory fibers became involved, result necessarily pain.

This varies greatly in character, duration, and localization in the different cases. In my series this symptom was present in all but two. Usually it was an early symptom and preceded the onset of the palsy, but in a few instances followed in the wake of the paralysis. As has been indicated by previous observers, it is chiefly centered in the canal and depths of the ear and the mastoid region. It is occasionally referred beneath the lobule, and in some of my cases was localized on parts of the external surface of the auricle, such as the tragus and the margin of the helix. In the more severe forms it radiates to the face, occiput and temporal region. The presence and character of this pain is so well known that it requires no special comment, except its almost constant presence in my cases, and its etiological relation to the sensory fibers in the facial.

It will be recalled that in the Donath series of one hundred and seventy-five cases, pain was mentioned in only seventy-five, but as the greater proportion of Bell's palsy comes under observation after the subsidence of the acute irritative symptoms, this may escape notice unless very specially investigated.

As has been previously mentioned, the hypesthesia of the face was present in only two of my cases, and could only be demonstrated by a most careful comparison with the sound side, and from its nature and distribution can not be regarded as of seventh-nerve origin, or even as anesthesia in the ordinary acceptance of this term. It is rather a functional or physiological

derangement of the fifth-nerve ganglion, induced by the motor insufficiency of the paralyzed face.

In nine of my cases *hypesthesia in the concha* of the ear was demonstrable. In one case the sensibility to touch and pain was increased in this region, and in two cases the aural reflex induced by touching the walls of the external meatus was absent although active on the non-paralyzed side. This disturbance of the sensation in the conchal region never reached the degree of anesthesia; the tactile sense was merely diminished or obtunded in this area, and care was required to demonstrate its presence, but I satisfied myself of its existence in each case by repeated and careful examinations. I was unable to demonstrate any definite changes of sensibility within the canal.

Some years ago Testaz attempted to utilize pain as a symptom of prognostic value in cases of palsy, but subsequent observations have not confirmed its importance. Future investigation may show that the presence of conchal hypesthesia is of value in determining the severity of the lesion to the nerve; for on theoretical grounds the sensory fibers being more resistant would escape in the milder grades of palsy. It is very probable, however, that other factors would have to be considered, which would lessen the importance of this symptom, such as variation and overlap in the adjacent sensory areas of this region. When one considers that the auricular branches of the fifth, tenth and ninth nerves, as well as the upper cervical nerves, converge in the region of the auricle, it is not surprising that the small conchal strip should be lost in compensatory overlapping.

*Pain in Primary Affections of the Auditory Nerves.*—Before leaving the subject of neuritic pain and its relation to the sensory facial, I would emphasize the connection existing between the nerve of Wrisberg, the geniculate ganglion and the termination of the acoustic nerve—and that pain occurring in the course of primary inflammation and sclerosis of the auditory nerve may be referred to this system. The original *anlage* of the geniculate ganglion and the ganglia of the cochlear and vestibular nerves are united in the ganglion acousticum-facialis, and in the later developmental and structural changes the close relation of these two sensory systems may be traced.

So close is this relationship that some have even regarded the acoustic nerve as a highly specialized part of the afferent facial

system, so that pain in primary affections of the auditory nerve may very justly be ascribed to sensory systems of the seventh nerve.

(d) *The Sensory System of the Seventh Nerve as a Reflex Factor in the Causation of Peripheral Facial Twitchings, Myokymia and Spasms.*—Having considered the sensory facial in its relations to herpes zoster, neuritis and neuralgia, it remains to indicate its importance as a reflex mechanism in the transmission of afferent impulses to the facial nucleus.

As we have seen the facial sensory system covers a very considerable area, the central branches of the cells of the geniculate ganglion traversing the internal auditory canal and the base of the skull to the medulla, while the peripheral branches in the petrosal nerves pass to the tympanic cavity and traverse the base of the skull in the middle fossa to the sympathetic ganglia on the second and third divisions of the fifth. Peripheral sensory filaments also course in the petrous canal with the trunk of the facial; so that irritative lesions in the external ear, the middle ear, the internal auditory canal or at the base of the skull would send impulses direct to the nucleus of the seventh by its sensory path. The recognition of this sensory pathway to the nucleus of the facial is, I believe, of practical importance in its etiological relations to the facial spasms of peripheral origin; and should always receive consideration in searching for the primary focus of irritation.

Brissaud, some years ago, separated from the facial twitchings of psychical (tic convulsif) and cortical origin (focal epilepsy), a type which was purely nuclear or peripheral in nature. This he regarded as induced by an irritation of the facial nucleus either directly or indirectly through one of the afferent systems terminating in the medulla near the nucleus and more particularly that of the trigeminus nerve. Irritative lesions originating in the eyes, mouth, nose and teeth, sinuses and other structures innervated by the trigeminus were regarded as important reflex factors. The sensory system of the seventh nerve was not, however, considered as a possible factor.

I have collected a large number of cases of facial spasm of the peripheral type, in which I believe the irritative afferent factor is represented by the sensory system of the facial. Among these may be mentioned structural lesions in the entire auditory

mechanism, *i. e.*, internal, middle, and external ear, also small tumors, aneurisms and localized inflammatory products situated at the base of the skull in proximity to the facial nerve.

It is a well known fact that facial twitchings and contractions occur very frequently as a sequence of the severer grades of Fallopian neuritis. It has also been rarely observed preceding the onset of the paralysis. In all of these groups the irritation may be conveyed directly to the nucleus by the sensory facial. I have also seen typical myokymia of the face, associated with deafness of many years duration, due to extensive lesions of the middle ear.

Babinski who has recently contributed to the symptomatology and pathogenesis of facial spasms believes that because of certain peculiarities in the nature and distribution of the spasm, it must follow irritative or dynamic lesions of the nucleus or trunk of the nerve; meaning trunk in its motor or efferent sense.

It is not necessary to enter into a discussion of the probability or improbability of this hypothesis; that irritation of the motor trunk of a nerve may have as a result, periodical or chronic contractions of a nuclear character. For as we have seen, the motor trunk of the nerve is accompanied by a corresponding sensory system from the medulla to the stylo-mastoid foramen, so that any impulses originating from an irritative or dynamic lesion would be conducted reflexly to the nucleus by its afferent path, and would explain the resulting state of nuclear irritability.

There are still other reflex phenomena of clinical interest, which might be mentioned in connection with the facial system, the trigeminous and the organs of hearing, but this phase of the subject is still vague and uncertain, and I mention it only as a field for future investigation. No satisfactory explanation has as yet been offered for the occurrence of temporary deafness or hyperacusis following disease or extraction of the teeth.

I have already considered the reflex otalgia as a visceral referred pain to the geniculate system; and when one also takes into consideration the close relationship existing between the auditory system and the geniculate system, originating as they do from a common nucleus in embryonal life (ganglion acusticum-facialis), we may find a solution for some of these curious auditory phenomena.

## CONCLUDING REMARKS

In the foregoing pages I have given a general survey of the clinical development of the facial nerve from a sensory point of view. That this nerve has a sensory system of importance finds corroboration on many sides. The results of investigations in the realms of embryology and anatomy find their counterpart in symptomatology and pathology.

I believe, therefore, that the seventh nerve should take a definite place as a mixed nerve and should rank with the fifth in our symptomatology and nomenclature.

In the case of the trigeminus the sensory functions far outweigh in importance its motor functions, which is in accord with the anatomical relations and distribution of this nerve.

In the case of the seventh nerve, the sensory system while playing a less important rôle, must still be regarded as a very definite factor and furnishes the basis for a variety of symptoms and syndromes of a sensory nature.

The anatomy of this region is so complex and so burdened with long descriptive names that a simpler division of the subject would seem justified, a division such as has been adopted in the case of the fifth nerve. In anatomical descriptions of the fifth nerve there are recognized a sensory and motor root on the proximal side of the ganglion, and three branches or divisions on the distal side.

The *ophthalmic* or first, *superior maxillary* or second, and the *inferior maxillary* or third, the motor root of the fifth joining the inferior maxillary division and is described with it.

This anatomical division of the trigeminal system has proved to be a very practical one and it has seemed to me that a reconstruction of the facial system along similar would have a clinical value (Fig. 6).

Such a reconstruction would recognize on the proximal side of the ganglion a motor and a sensory root and on the distal side of the ganglion three branches:

*Peripheral Divisions of the Seventh Nerve.*

- (1) The great superficial petrosal with its tympanic branch and connections with Meckel's ganglion.
- (2) The small superficial petrosal nerve with its tympanic branch and connections with the otic ganglion.

(3) The Fallopiian facial, including the motor trunk, the chorda tympani and sensory fibers for the auricle.

While such a division of the nerve may not serve the anatomist, who divides the facial according to its relations in the

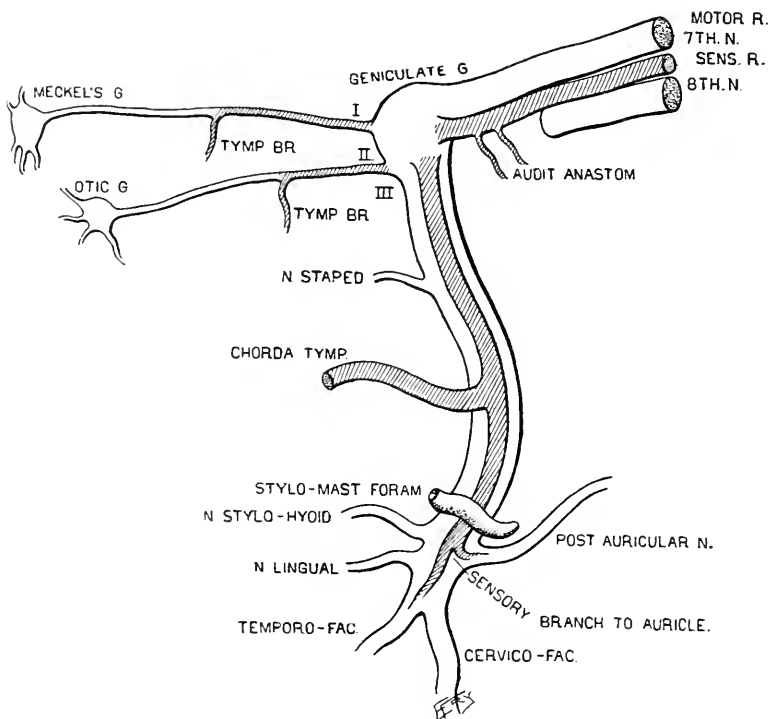


FIG. 6.

temporal bone into intra- and extra-petrous branches, it would, however, furnish a rational anatomical basis for clinical descriptions and the classification of the various motor, sensory, special sense and splanchnic functions of the seventh cranial nerve. (Figs. 5 and 6.)

#### SUMMARY.

##### *Sensory Functions of the Seventh Nerve.*

Special sense fibers to the anterior two thirds of the tongue (chorda tympani).

Sensory anastomosis with the terminations of the auditory nerve (internal ear).

Sensory fibers to the middle ear, mastoid cells and eustachian tube (deep branches of the petrosal nerves).

Sensory fibers to the anterior two thirds of the tongue (chorda tympani).

Sensory fibers to the external ear (emerging with the facial trunk at the stylo-mastoid foramen).

### *Sensory Symptoms and Syndromes of the Seventh Nerve.*

**PAIX.**—*Organic Origin.* Fallopiion neuritis (third branch); tabetic degenerations (sensory root); herpetic otalgia (geniculate ganglion).

*Functional Origin.*—Primary otalgia (tic douloureux of the ear); reflex otalgias.

*Anesthesias.*—Hypesthesia of the concha; hypesthesia of the anterior two thirds of the tongue; ageusia of the anterior two thirds of the tongue.

*Reflex.*—Reflex etiological factor in the production of reflex facial twitchings and spasms.

*Syndromes.*—The herpetic inflammations of the geniculate ganglion; herpes oticus; herpes oticus with facial palsy and acoustic symptoms; herpes facialis and herpes occipito-collaris with seventh palsy and acoustic symptoms.

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## A SECOND ATTACK OF GENERAL POST-DIPH- THERITIC PARALYSIS OCCURRING AFTER AN INTERVAL OF TWO YEARS

BY F. E. COULTER, M.D.

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Second attacks of multiple neuritis irrespective of cause, have been noted, but are not of very frequent occurrence, the alcoholic variety being probably the most common. Second attacks of general post-diphtheritic paralysis seem to be of more rare occurrence, at least I am unable to find mention of a similar case in any of the literature at my command. The following report is submitted because of this unique condition, which was found to exist in a patient after an interval of two years, during which time, for the most part, he enjoyed good health; one attack of paralysis at least being preceded by undoubted diphtheria and probably both were. Repeated diphtheritic infection in the same individual is well authenticated and that one attack only provides immunity for a limited period is well understood. Sir William Gowers makes the statement that he himself suffered a second attack of diphtheria only six months after the first, when he again subjected himself to similar conditions as those under which the disease was contracted previously. The exact duration of the immunity following an attack of diphtheria seems to differ in different persons, much depending upon the degree of health of the individual in question, as well as his capacity for resistance. It is a truth well established that individuals differ as to their capacity of immunity to different toxic elements. The theory for this condition of affairs, which has been recognized clinically by the profession, and even the laity, for many years, has only been satisfactorily explained by modern investigators.

Post-diphtheritic paralysis or more properly speaking, post-diphtheritic neuritis, has been known to exist for at least one hundred and fifty years, yet the etiology remained a problem to

be intelligently solved only by modern investigation. In no field of medicine do bacteriology, medical chemistry and refined methods, play so important and practical a part in the management of disease as in the case of diphtheria. There still seems to be some difference of opinion, however, among the profession, as to what result the introduction of antitoxin has had upon the neuritis following diphtheria. One class contends that in proportion to the entire number of cases treated, there is more paralysis, for there are more recoveries, the other class holds that the use of antitoxin lessens the liability to paralysis. Just which is right can only be determined by future careful observation and clinical data.

#### FIRST ATTACK

*CASE.*—The patient, S. McH., was first seen February 15, 1904, having been referred by Dr. J. N. Agan, Pender, Nebraska. At this time the following history was obtained: The patient was twenty-four years of age, single; occupation, farmer, but had served as a soldier in the Philippines; as to the family history it was inconsequential, three brothers and one sister having died of scarlet fever in early life; no tuberculosis, cancer, nervous diseases, or insanity was found. As to the patient himself, his health had always been good, he had had scarlet fever when two and a half years of age, recovered without sequelæ, went to the Philippine Islands as a soldier three years ago, was in service there two years, ill with fever and chills three weeks of that time, and was in the hospital two or three times with dysentery, altogether in the hospital about six months, was only moderately temperate as to alcoholics, but was not considered one who used them to excess—he used considerable tobacco by smoking; venereal history negative.

*Present Illness.*—On the seventh or eighth of November, 1903, became ill with throat trouble, membrane appearing with fever. This was diagnosed as diphtheria by Dr. Agan, a very competent general practitioner. The patient was not treated with antitoxin, and no cultures were made. The entire illness lasted about two weeks, at the end of which time his throat cleared, fever subsided and he seemed to recover excepting for a general weakness. About one week later he began to have difficulty in swallowing liquids; these would regurgitate through the nose, and about the same time began to have trouble with vision. About Christmas (six weeks after onset of illness) the weakness in the limbs became so pronounced he was unable to go up steps and fell down several times while trying to walk in the house. The right side seemed markedly weaker in proportion

than the left; he remembers having had no pain or altered sensation in any portion of his body up to this time. This weakness slowly increased until the latter part of January, 1904, when he began to note numbness in his feet and legs, then about one week later this extended up the extremities, his feet felt cold and then all the extremities were weakened, the lower more in proportion than the upper. Other than the trouble mentioned he exhibited no difficulty in swallowing. This all had been in existence four or five weeks. No trouble with the sphincters developed at any stage.

*Upon examination* he was found to be a solid, well built, dark complexioned individual of phlegmatic temperament, somewhat sallow in appearance, with speech normal except slightly thickened, nutrition fair and he slept well.

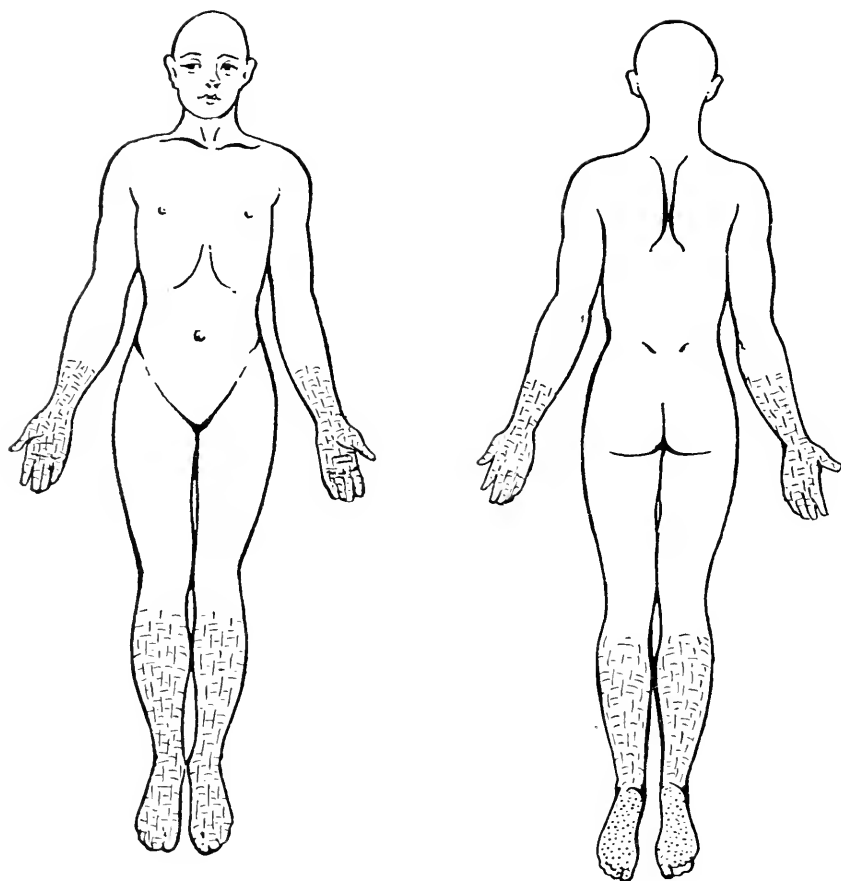
*Mental condition* good throughout.

*Special Senses and Cranial Nerves.*—The smell, taste and hearing were not examined accurately, but appeared normal; sight was good (February 16, 1904) the pupils were found to be equal, borders regular, medium in size, reacted well to light and accommodation, no ocular palsy or nystagmus, convergence good, palpebral fissures normal. The fifth and seventh cranial nerves were found to be normal and equal throughout, the palate on phonation reacted feebly, reflex action was markedly diminished, and sensation was definitely impaired, as to the remaining cranial nerves they seemed to be quite normal.

*Sensory System.*—A blunting to pain and touch of rather a glove and stocking character was observed, the former extending to about a hand's breadth above the wrists, and the latter to a point just above the knees, except on the soles where he was rather hypersensitive. The muscles were rather more tender to pressure than normal, especially in the arms, and the median and ulnar nerves were very tender to pressure (see Figs. 1 and 2).

*Motor System.*—Abdominal and back muscles good, he could sit up without using arms when lying extended on back on couch, weakness of shoulder and pelvic girdle muscles marked, also of limb muscles, rather greater proportionate weakness was noted in proximal than distal segments and distinctly weaker on right than left, the dynamometer showed the right grasp nothing, left grasp 20, the gait was feeble and unsteady and he required support, it was steppage in character and incoördinate, there was some incoördination in the arms but he was too weak to test accurately, muscles tested electrically and all reacted to moderate faradism, muscles of low tonus.

*Reflexes.*—*Superficial*; epigastric and abdominal present and equal, upon stimulation of the plantars no movement of toes noted but contraction of tensor fascia femoris was observed. *Deep*; supinator, biceps, triceps, knee-jerks, ankle-jerks and ankle clonus, all absent.



Represents Anesthesia.



Represents Analgesia.



Represents Hyperesthesia.

} Condition Feb. 16, '04.

FIGS. 1 and 2. The horizontal lines represent anesthesia, the perpendicular lines analgesia, the dots hyperesthesia. (Condition February 16, 1904.)

*Viscera*, cranium and spinal column normal, heart regular, rate 84, sounds clear, reduplication of second sound at base, other viscera normal, also urinary examination proved to be negative.

*Remarks.*—Patient was admitted to St. Joseph's Hospital, where he was treated by strychnia, massage and faradism, and about three weeks later the following notation was found on record:

*March 9, 1904.*—Patient much improved, can walk without assistance but is unsteady, his general strength is much improved, however it is not yet near what it should be for muscular development of patient. Case was dismissed from the hospital upon this date and referred to Dr. Agan with suggestions as to future treatment.

*Note.*—Patient returned to his home and continued to improve steadily; by the middle of June, 1904, about three months after leaving hospital, he considered himself perfectly well and returned to his work as a laborer on the farm.

## SECOND ATTACK

January 8, 1906 (about two years after first attack), I was called to see this patient a second time at the Drexel Hotel, Omaha, where he gave the following additional history: After recovering from his previous illness in 1904, he continued well until in February, 1905, when he had a recurrence of sore throat, but did not call a physician at this time. He was compelled to discontinue his occupation for a few days. He used some simple remedies, gargles, etc., and seemed to recover, excepting that there was a weakness and heaviness in his legs, especially the calves. He was unable to perform his usual work for about one week because of the illness and subsequent weakness, after which time his limbs seemed to recover their normal strength, and he returned to his usual occupation. He remained in a normal condition and engaged in hard labor after this until December 6 or 7, 1905, and then while in New Mexico, he suffered again from sore throat; this lasted for about one week or ten days. During this time he had headache, backache and fever, and was confined to his bed and room two weeks. He used a gargle and some medicine internally, prescribed by a physician, and again his throat began to improve. About two weeks later he began to note weakness in his legs and arms, gradually this condition became worse, so that he could scarce walk at all, and on December 31, he fell while walking and was unable to arise without assistance. Simultaneous with the weakness he began to experience numbness in his fingers, then hands and arms. This gradually extended up to the elbows and also at the same time a like sensation began to appear in his feet and legs, extending to the knees. By some one assisting him he was still able to get around in his room at the hotel when seen January 9, 1906,

but he would fall if not very careful, or if he depended upon crutches he was liable to fall. The weakness and numbness during this last attack seemed to appear simultaneously in all extremities, as near as he could remember. After two or three weeks from the onset of the weakness he began to note difficulty in swallowing, by the regurgitation of liquids through the nose. The last three days previous to my visit, that is about January 6, this condition began to improve, he thought, somewhat. He complained also of difficulty of vision for about one week, being unable to read during the second attack, but this had almost disappeared on January 9. He also complained of a tight feeling around his chest, especially in the region of his heart.

*Upon examination* the general physical condition is found to be much the same as two years ago, nutrition good, speech a little thickened, sleeps well and has good appetite.

*Cranial Nerves* all seem normal and equal excepting the pupils, which react to light fairly well but are sluggish to accommodation, and the palate reflex upon voluntary effort gave a weakened response, and upon touch was found to be anesthetic.

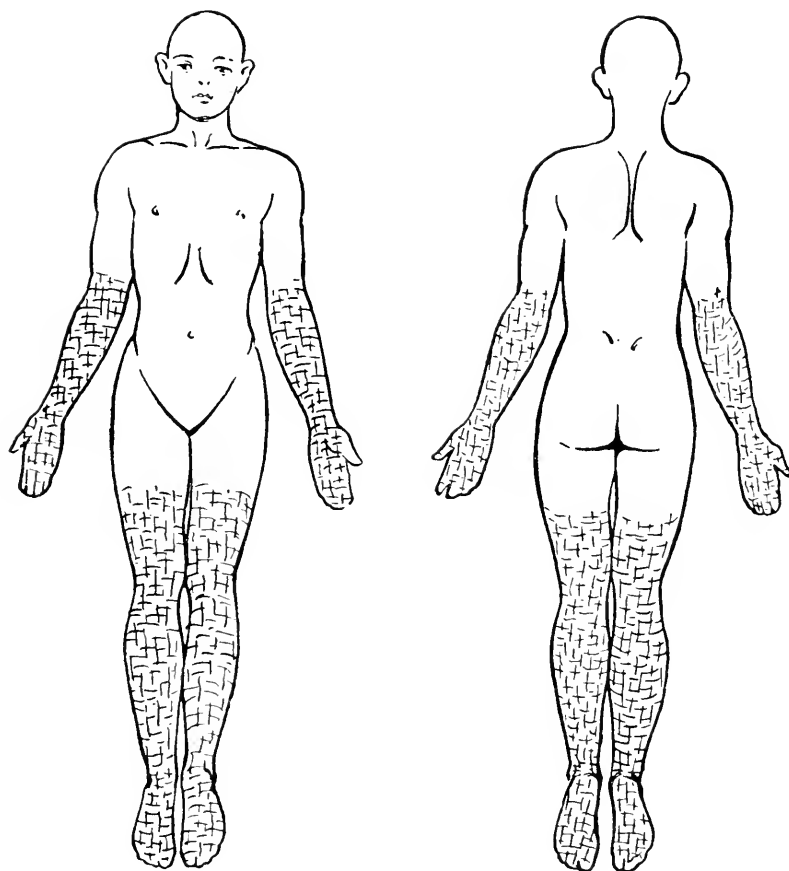
*Sensory System.*—The area of anesthesia and analgesia was found in the arms to extend above the elbows half way to shoulders, and in the legs midway from knee to trunk, this being increased over that found present during the first attack (see Figs. 3 and 4). Subjective numbness was present in all extremities, upper to elbows and lower to knees. Nerves and muscles in extremities slightly tender upon pressure.

*Motor System.*—Marked weakness was present in all the extremities, was unable to raise hands from knees unaided, grasp as indicated by dynamometer was nil both right and left, but could raise feet unaided a short distance from the floor and would stand if assisted, but was markedly incoördinate in use of feet. Trunk and abdominal muscles fairly good; the distal segments of all extremities were weakened more than proximal. This was the reverse and was more evenly distributed as relates to the two sides from what was found present in first attack.

*Reflexes.*—*Superficial*; the epigastric and abdominal were found present and equal, the cremasteric was diminished both right and left and the plantars were not obtained. *Deep*; supinators, biceps, knee- and ankle-jerks were found to be just present but diminished; they subsequently disappeared within one week, and did not return during his stay in the hospital.

*Viscera.*—Heart was found to be irregular and rapid, but both sounds were clear, pulse 120, low tension, other organs were quite normal and urinary examination was again negative.

*Remarks.*—Upon inspection the entire throat seemed quite clear of membrane but the mucosa was of a liver-red color. A culture was made from this region and undoubted bacteriological evidence of the recent presence of the Klebs-Loeffler bacillus was



Represents Anesthesia.



Represents Analgesia.

} Condition Jan. 9, '06.

FIGS. 3 and 4. The horizontal lines represent anesthesia, the perpendicular lines analgesia. (Condition January 9, 1906.)

found. No antitoxin was used, for it seemed apparent that he had passed the stage when benefit was to be derived from that source. He was sent to the hospital January 10, 1906, and the same treatment instituted as was used during the first attack.

*Note.*—January 27, anesthesia and analgesia is confined to wrists and hands and to ankles and feet; power improved over one week ago, and heart about normal in frequency and action; can take a few steps unaided excepting by the use of crutches.

*Note.*—February 5, anesthesia and analgesia practically confined to fingers and toes; can walk fairly well by use of crutches; strength much improved.

*Note.*—February 13, patient can walk by use of one crutch and a cane, still improving, anesthesia and analgesia confined to terminal phalanges and even here not very definite, deep reflexes absent, heart apparently normal, is discharged from hospital upon this date and is referred to Dr. Agan for future treatment.

*Note.*—March 2, father of patient reports that his son has discarded the crutches entirely and can do a little light work about the house; later the patient reports that about the middle of May he resumed his ordinary work.

*Note.*—October 10, 1906, patient reports in person and upon examination found him normal in every particular, the deep reflexes all having returned and are quite normal. He also reports that he has changed occupation and is now a locomotive fireman, that he is on duty from ten to eighteen hours daily and that his strength is everything he could desire.

*Remarks.*—From the above clinical observations it would seem apparent that the amount of residual antitoxin in this particular individual two years after the first attack of diphtheria was practically nil. Certain bacteriologists make the statement that in about 83 per cent. of normal adults there is found diphtheria antitoxin; also so far as has been discovered that the antitoxic substance present in the body of the normal organism is identical with that found in actively immunized animals (Wassermann). It is to be regretted that not more bacteriological observations could have been made in this particular case, for instance during the interval between the attacks as well as at the time the case first came under observation.



# Society Proceedings

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## NEW YORK NEUROLOGICAL SOCIETY

February 2, 1909

The President, DR. J. RAMSAY HUNT in the Chair

### A CASE OF EPILEPTOID SEIZURES WITH PECULIAR AURA

By S. P. Goodhart, M.D.

The patient was a man, 36 years old, whose family and previous history were unimportant. In June, 1905, without any premonitory symptoms, and while quietly conversing, he suddenly felt a peculiar sensation in the calf of the left leg, as though the leg was swelling to such a degree that his shoe would burst open. He attempted to remove the shoe, but before he was able to do so he became unconscious. Upon recovering from this within a few minutes he had a mild general convulsive seizure and became violent. He was removed to a hospital, where, after six hours, he recovered consciousness suddenly and complained of lassitude and headache. After a few days he was able to return home, apparently well. Seventeen days later he had a second similar attack, with the same peculiar sensations in the left leg. Before losing consciousness, however, he was able to remove his artificial teeth and lie down, as he had been instructed to do. Upon lying down, the patient had the most disturbing sensations, as though the bed were rapidly revolving about him, and then as though he were being rapidly turned on a large iron horizontal bar. He likewise remembered that he heard shouting, and he knew that he was calling, but his voice seemed to emanate from another being within himself. The revolving sensations doubtless occurred while the patient was being restrained, just before consciousness was lost.

Following this attack there was some paresthesia over the calf of the affected leg, which persisted. About a year later he had a third attack, and on the following day a fourth one, and in both of these the same peculiar aura was present.

Since that time, Dr. Goodhart said, the patient had had no further attacks. Examination at the present time showed an area of almost complete anesthesia over the calf of the left leg, and there was a slight difference in the circumference of the two calves, that on the affected side being smaller. In reply to a question, Dr. Goodhart said he did not believe there was any actual swelling of the leg, as the patient had described it; it was simply a sensory manifestation.

Dr. B. Sachs, the retiring President, expressed his thanks to the members of the Society for the cordial support they had given him during his term of office. The excellence of the programmes, as well as the attendance gave proof that the fields of neurology and psychiatry had by no means been exhausted, and that there was still a large variety of sub-

jects open for discussion. In connection with the future course of the Society, he suggested that too much dependence should not be placed on the reading of stray papers, but rather that set topics should be determined upon for discussion, and that at least one or two meetings should be set apart for clinical purposes.

#### THE SENSORY SYSTEM OF THE FACIAL NERVE AND ITS SYMPTOMATOLOGY

By J. Ramsay Hunt, M.D.

The President-elect delivered an address, which embraced a general discussion of the sensory system of the facial nerve, *i. e.*, the geniculate ganglion and its central and peripheral divisions, its symptoms and syndromes.

(See this Journal, p. 321.)

#### HISTOLOGICAL STUDIES OF CASES OF GENERAL PARESIS OF LONG DURATION.

By Charles B. Dunlap, M.D.

The speaker presented a short report on this subject, based on four cases which varied in duration from eleven to twenty-three years. For the material and the clinical notes he acknowledged his indebtedness to the state hospitals mentioned below.

The first case (H. C.), of eleven years duration was received from the Rochester State Hospital. The patient, whose psychosis began at the age of thirty-eight, committed suicide by hanging in the eleventh year of his disorder. He went through an early period of bewilderment, followed by a maniacal condition; then lapsed into a quieter paranoic state in the fourth year, and somewhat later was very expansive. The data on which the diagnosis of general paralysis was made clinically were as follows: thick speech, tremor of the lips, unsteady writing with omission of letters, and exaggerated knee jerks; one convulsive episode; mental deterioration, with persistence in delusions about which he did not reason; inability to recall important facts in his life, such as the date of his marriage, his son's birth, etc.

The brain presented slight frontal atrophy, thickening of the pia and ependymal granulations. In the cortex moderate loss of parenchymatous elements, little neuroglia reaction, slight increase of blood vessels and a general very slight infiltration of the vessel sheaths with lymphoid and plasma cells, completed the anatomical picture and confirmed the clinical diagnosis.

In the second case (H. R.), from the Middletown State Homeopathic Hospital, also of about eleven years duration, tabetic symptoms accompanied the psychosis. Like the first case, sudden death, a result of choking on food, cut the disorder short. Syphilis was inferred from a genital scar. The onset was acute (age not stated) with great expansiveness, unequal and almost irresponsive pupils, and later, absent knee jerks. The progress was marked by bodily and mental deterioration for a while, and the occurrence of one parietic seizure and one fall with unconsciousness, but after three or four years the patient was stronger and there was little further change. The mental deterioration and the physical signs made the clinical diagnosis of general paralysis clear.

The brain in this case was considerably atrophied, the pia milky and partly opaque, and ependymal granulations were present; the same slight cortical changes described in the preceding case were found, but there was more reduction in thickness of cortex, as might be inferred from the atrophy. In the postero-median columns of the spinal cord there was diffuse thinning of fibers. The clinical and anatomical diagnoses were in full agreement.

The third case (H. L.), of fifteen or more years duration, was received from the Hudson River State Hospital. This patient had had a chancre. He was first admitted at the age of fifty-nine (no details available), and after the first two years of hospital life his psychosis improved and he returned home; he resumed his former occupation but was admitted again, in a confused, loquacious, tremulous condition, after being outside for five years. Confusion, dementia and general bodily weakness marked the further course, together with marked expansiveness; shortly before death, which occurred at the age of seventy-four, there was a temporary paralysis of the right arm and leg. The clinical diagnosis was general paralysis. Slight atrophy, diffuse grayness of the pia and a finely granular ependyma were the gross findings. The histological features were general infiltration of the pia with lymphoid and plasma cells, but only slight involvement of the cortical blood vessels, except in the temporal lobes and medulla oblongata, where the infiltration was of moderate intensity. There was some parenchymatous loss in the cortical layers. Certain pigmentary changes in the nerve cells and thickening of the blood vessels could be associated with the advanced age of the patient.

The last case (M. O.), from the Middletown State Homeopathic Hospital, was of 23 years duration. No mention was made of syphilis. The onset was sudden, at the age of thirty-seven, with an acute delirious condition, hallucinations, delusions and violence. This soon quieted down but left as physical signs: irresponsive pupils, drooping of one eye-lid, tremor of the lips, hesitation in speech and difficulty in pronouncing words. Mentally, there was great expansiveness, at a later period depression, then the expansiveness returned. Dementia was irregularly progressive, until finally the patient's mind became practically a blank. Various neurological incidents occurred in the first three years, such as left ptosis, left facial paralysis, right external strabismus and hemiplegias shifting from one side to the other with considerable rapidity. These are all believed to have been transient as they were mentioned but once in the record. Towards the last there was some rigidity and partial ankylosis of one arm with contraction of the fingers; only one convulsion was noted. The patient died at seventy and the clinical diagnosis was general paralysis. There was marked atrophy in the brain and much cerebro-spinal fluid. The pia was partially opaque and there were marked ependymal granulations. The blood vessels were atheromatous. Characteristic microscopic changes, although of very slight intensity, were found in all sections. There was little neuroglia activity, some increase of vascularity, but scanty infiltration.

The unusual features common to all these cases were long duration and very slight anatomical changes, especially as to vascular increase, infiltration, and slight neuroglia changes; but the essential differential features without which a diagnosis of general paralysis cannot at present be made histologically, were all confirmed; namely, various degrees of destruction of parenchymatous elements, together with so-called inflam-

matory processes in the vascular apparatus, not localized but diffused throughout the cortical and subcortical tissues, and consisting in an infiltration of the vessel sheaths with lymphoid and plasma cells; some increase of blood vessels, and some reaction on the part of the neuroglia. There was also an infiltration of the pia with the same kind of cells. These characteristics are sufficient to distinguish general paralysis from cerebral syphilis, and from the non-inflammatory conditions of senile dementia, arterio-sclerosis, and the psychoses of alcoholic origin. The loss of parenchymatous tissue in the above cases of long duration was diffuse and little noticeable except when brought in contrast with a normal cortex by means of photographs.

The discussion of these cases was supplemented by photographs and lantern slides which illustrated not only the types of long duration with slight changes, but also the ordinary types of general paralysis with abundant and easily recognized microscopic findings. In all the illustrations, where comparisons were to be made, the normal and the paralytic cortices were placed side by side.

#### GENERAL PARALYSIS OF AN UNUSUALLY LONG DURATION, WITH A REPORT OF TWO CASES, ONE WITH NECROPSY

By Morris J. Karpas, M.D.

The author stated it was generally recognized by various authorities that the life history of general paralysis approximated between two and five years. Cases in which the duration was eight years or over were considered atypical and exceptionally rare. In his own experience with general paralysis in the female, he found only two cases in which the duration of the disease was unusually long. One patient had suffered from paresis for the past twelve years, and at present enjoyed very good health; the other one was afflicted with the malady for eighteen years, and her death was due to the intercurrent of another disease. Dr. Karpas then reported in detail the history of these two cases. In the first case, the symptomatic picture from the psychical point of view presented many atypical features, which were: The apparently abrupt development, long period of excitement without fatal termination, peculiar behavior, persecutory-hallucinatory reaction, and, moreover, the present general mental dilapidation partook of many characteristics of dementia præcox. However, the striking somatic signs, associated with a very marked lymphocytosis and writing defect could only be explained on the grounds on a parietic process. Indeed, the diagnosis of general paralysis could not be questioned.

In the second case, the onset, the various mental phases of the disease picture and the well-defined physical signs were decidedly of a parietic reaction. It was interesting to note that the clinical phenomena of this case manifested the three well known forms of paresis, namely, anxious, grandiose and demented, each of which ran a peculiar course. It was worthy of emphasis that in the last case especially there were factors which doubtless were detrimental from a prognostic standpoint. Among these were (1) virulent syphilitic infection; (2) chronic alcoholism; (3) stress of life; (4) emotional upset; (5) early appearance of convulsions; (6) long standing dementia; (7) progress with remissions; (8) the form of paresis was cerebral. According to various observers and investigators,

general paralysis of the tabetic type had relatively a much better prognosis than that of the cerebral affection.

In spite of all these unfavorable conditions, this patient lived eighteen years, and the cause of death was precipitated by another disease. The question might be asked, how were we to explain this unusual longevity of such a grave disease in the presence of so many deleterious factors? While theoretically, many hypothetical assumptions could be advanced, nothing was more plausible and forcible than to accentuate the important fact that the constitutional coefficient played an important rôle in the production and modification of a psychosis, be it functional or organic.

A necropsy in this case was held an hour and a half after death. The calvarium was symmetrical, extremely thickened, and dense. The diploë was preserved, and on the inner surface of the frontal bones a few small exostoses were seen. The amount of cerebrospinal fluid was increased. The pia showed a moderate symmetrical haziness, which was most marked in the frontal and anterior Sylvian regions. Infiltration was well marked along the mesial surface of the hemispheres, and over the cerebellum. In the floor of the fourth ventricle slight irregularities but no well defined granulations were visible. The basal vessels showed a very slight degree of atheroma. The frontal and temporal tips were adherent. The brain as a whole was moderately atrophic, and its weight was 1,120 grams.

The histo-pathological changes were similar to those described by Dr. Dunlap, excepting in the sections of the first frontal, there was a diffuse glial hyperplasia of moderate intensity throughout the cortex, marked general endothelial proliferation, which led to multiple channel formation, and the prefrontal region showed more marked glial reaction, with considerable irregularity in the architectonics of the cortex, with distinct narrowing of it due to dropping out of nervous elements. The gyrus rectus showed the same lesions, with the glial hyperplasia and the endothelial changes paramount, but with well-marked dropping out of the nerve cells and reduction of the cortex in areas. The cornu Ammonis revealed typical changes of moderate severity, and the occurrence of particularly large spider cells was noted.

Dr. Sachs said the papers of Drs. Dunlap and Karpas were both extremely interesting and valuable. The first question that arose in his mind in connection with the cases of general paralysis of unusual duration was whether we were really correct in speaking of them as examples of this affection. Personally, he recalled one case of fifteen years duration, and in the course of the past twenty years he had seen a considerable number of cases that had lasted five or ten years. He had at present one case that had been under his constant observation for four years and another six years, and in both the diagnosis of general paralysis could be based on the usual grounds. The question was whether, after all, the name general paralysis could be regarded as a specific term, or whether we should include under it a number of different mental diseases? Probably some of these long-standing cases were really examples of cerebrospinal syphilis.

In one of the cases upon which some of the histological studies made by Dr. Dunlap had been based the patient was of such an advanced age that the question arose whether the findings should be accepted as those of classical general paralysis, and many of them would probably correspond very closely to those of advanced senile dementia. In other cases, the point that struck him was the marked lack of vascularity. In concluding, the speaker emphasized the thought that we should be a little

careful about classifying all these cases as general paralysis, and accepting the anatomical findings as a basis for that diagnosis.

Dr. Edward D. Fisher said that most of the cases reported by both Drs. Dunlap and Karpas seemed to him more or less atypical. Personally, he had seen a number of cases of general paralysis in which the question of diagnosis during life was rendered more or less difficult by symptoms that could be attributed to alcohol and syphilis. In some of these the obscure symptoms cleared up; in others they did not, and left the diagnosis in doubt. The microscopic findings of Dr. Dunlap were illustrative of degenerative conditions in the brain, and it would be interesting to compare them with the findings in old syphilitic cases associated with progressive dementia. The speaker recalled the statement of Dr. Adolf Meyer that during the end stages of many of these conditions the pathological findings were so similar that they could not be differentiated, and the question arose whether we could base our diagnosis on the pathological findings in long-standing cases of general paralysis.

Dr. B. Onuf said that a comparative study of the histological findings in cases of chronic alcoholism, pseudo-paresis and typical general paralysis would be both interesting and instructive. It appeared from Dr. Dunlap's paper that the actual histological findings in cases of long-standing general paralysis, aside from those of atrophy, were meager, and the outlook of finding some special characteristics of general paralysis from a pathological standpoint did not seem very encouraging. Clinically, it was sometimes extremely difficult to distinguish between cases of alcoholism, pseudo-paresis and general paralysis, and the same was true of certain cases of syphilis and general paralysis, it would be very instructive if Dr. Dunlap informed us whether the pathologic-anatomical changes underlying these conditions gave after all some definite differential diagnostic clues and in what these consisted.

Dr. Hunt referred to the changes that were found in the cortex in some cases of locomotor ataxia. They were apparently analogous to those observed in dementia paralytica, yet they gave no signs clinically.

Dr. Dunlap, in closing, replied to Dr. Sachs's query as to whether these cases could rightly be regarded as examples of general paralysis from a clinical standpoint, by saying that he was not speaking from that standpoint; the clinical diagnosis, however, in all of these cases, was that of general paralysis. Clinically, it was sometimes very difficult to make the diagnosis between general paralysis, chronic alcoholism, senile, arteriosclerotic and syphilitic conditions. Anatomically the task was simpler and the essential grounds on which the diagnosis of general paralysis was based were the presence of a diffuse infiltration of the vessel sheaths with lymphoid and plasma cells, and degeneration of the cortical elements. In cases of brain syphilis this diffuse infiltration with lymphoid and plasma cells was not found, and there was no difficulty in differentiating the gummatous forms of cerebral syphilis from general paralysis. In the meningeal forms of cerebral syphilis the differentiation became somewhat more difficult, but was by no means impossible; here the meningitis was the factor upon which most stress was laid, and the inflammatory process, if it invaded the cortex at all, did so as a result of direct extension from the meninges, while in general paralysis no such relation was present, but the process was diffuse and the cortex might be extensively affected, while the meninges showed little change; in other words, there was no relation between the two. In senile or alcoholic cases the absence of an

inflammatory condition, as shown by the absence of lymphoid and plasma cells in the vessel sheaths was again the differential point. In these cases of general paralysis of long duration this infiltration of the vessel sheaths with lymphoid and plasma cells, though slight, was perfectly characteristic and confirmed the clinical diagnosis. The speaker said that personally he had not seen the statement attributed to Dr. Adolf Meyer that in the end-stages of certain of these mental conditions the pathological findings were of little or no differential value, and that he could not reconcile this statement with Dr. Meyer's standpoint as he understood it. In reply to Dr. Hunt, he said that he had no opportunity of making histological studies in the brains of cases of pure locomotor ataxia, but only in those cases which had a mental disorder in addition to the ataxia, and, therefore, he could not say whether the changes in the brains of tabetics were analogous to those observed in dementia paralytica; in several of the tabetic cases, however, which had mental disorders, the characteristic changes of general paralysis were not present.

## THE PHILADELPHIA NEUROLOGICAL SOCIETY

January 22, 1909

The President, DR. J. W. McCONNELL, in the Chair

### A CASE OF PROBABLE OCCLUSION OF THE POSTERIOR INFERIOR CEREBELLAR ARTERY

By Horace Carncross, M.D.

F. R., 42 years of age, was utterly unable to speak, had difficulty in swallowing and some slight dribbling of saliva. His understanding was normal and he communicated by writing. There was a paralysis of the interarytenoid muscle, which left a triangular chink at the posterior commissure upon approximation of the weak vocal cords, and there was paralysis of the left palate and uvula, although the arch moved very slightly on the left side upon attempting to say "a." There were no other objective symptoms with the exception of an inability to stand well on the left foot alone, and a Babinski reflex on the left. These symptoms came on suddenly without loss of consciousness about 15 years ago, at which time there was the greatest difficulty in swallowing (fluids returning through the nose) and excessive dribbling of saliva. There was also weakness in the left leg. At present there is no disturbance of sensation. He was very emotional and for the past six years has had epilepsy. The convulsions are general and occur once or twice a month. There is a fairly satisfactory history of syphilis previous to his "stroke" 15 years ago. The present symptoms point to a lesion involving the nucleus ambiguus from which the motor fibers arise to supply the larynx and pharynx. The sudden onset of the pharyngeal and laryngeal paralysis following a syphilitic infection, and unaccompanied by loss of consciousness and either facial or other paralysis (except a slight weakness of the left leg) point to an occlusion of the right posterior inferior cerebellar artery as the most probable cause. There may have been crossed sensory disturbances at the time of onset but this could not be determined. There is at present no weakness in the left leg; knee jerks are very slightly increased.

Dr. Charles K. Mills said it was a very interesting case, but it did not seem to him that the diagnosis of the locality of the lesion was quite proved in the absence of certain features of the symptom complex. It is true that a long time had elapsed, but Dr. Mills thought that in a case where some symptoms were so persistent that others should have entirely disappeared. A cortico-subcortical tumor may give most of the features of this case. He recalled one case of brain tumor, the specimen now being in the Laboratory of Neuropathology of the University of Pennsylvania, in which a tumor extending from a point a little forward of the central fissure into the frontal lobe caused a pseudo-bulbar syndrome—oroligual paresis, lowering of the voice tone, left hemiparesis and left hemispasm—in which the symptom complex was somewhat like that now furnished by this patient.

Dr. W. G. Spiller stated that the man shown by Dr. Carncross had been coming to the Polyclinic Hospital some time. His symptoms developed some fifteen or more years ago and had been modified in the course of time. The great paralysis of the soft palate, which is a little more marked on the right side than on the left, the difficulty in swallowing, and the paralysis of the interarytenoid muscle are difficult to explain as the result of a cortical lesion without any weakness of the limbs or any involvement of the tongue. The attack, from the history given by the sister, occurred suddenly. The man was not paralyzed on either side of his body. It seemed to Dr. Spiller to be a case in which a lesion had developed in the medulla oblongata in the distribution of the posterior inferior cerebellar artery. Dr. Spiller said he could not understand the persistent paralysis of the soft palate on each side and the weakness of pharynx and larynx lasting for the period of fifteen years, from a cortical lesion of one side. The man was clearly syphilitic, he had arterial disease and probably his convulsions were due to syphilitic arteritis.

Dr. F. X. Dercum thought that the symptoms pointed to a bulbar rather than a lenticular lesion. An embolism involving the lenticular nucleus is perfectly conceivable, but it would hardly give rise to so persistent a difficulty in swallowing and so persistent a paralysis of the soft palate. Notwithstanding the possibility of a lesion of the basal ganglia should be borne in mind. Another hypothesis favored by the absence of sensory symptoms would be that of a limited polioencephalitis inferior but this would not explain this case. Dr. Dercum understood from Dr. Spiller that the symptoms came on suddenly while the patient was awake. Dr. Dercum thought that this would be in favor of a lesion of a blood vessel rather than of a polioencephalitis. Polioencephalitis may, of course, come on rapidly, may come on over night, but if the symptoms come on suddenly, it would suggest rather occlusion of a vessel.

Dr. Carncross said that there was some doubt about the time of onset of the disease. The sister wrote that the condition came on in the morning while he was combing his hair. She asked him a question and he turned toward her but was unable to reply. He himself thought its onset was during the night. He was apparently not very ill at the time. It was impossible to give further details of the onset of the disorder. The man is able to write. His epilepsy came on six years ago, so that the connection between the symptoms is not from the beginning. The convulsions are general and are in no way focalized.



## A CASE OF MORBID SLEEPINESS

By T. H. Weisenburg, M.D.

The patient is a young woman, 32 years of age, with an excellent family and past history. She has been raised on a farm and all her life has been accustomed to rising at 4:30 in the morning and going to bed about seven at night. At the age of sixteen it was first noticed that the patient would have a tendency to sleep at all hours of the day. She would, for instance, rise in the morning and directly after breakfast would put her head down on the table and go to sleep, this continuing until someone woke her. This has persisted ever since, or for 16 years. At one time for a period of about three years she was so drowsy that she would even go to sleep while on her feet. She would hang her head to one side and then would sink into a chair and sleep until someone would waken her. The period of her sleep would last indefinitely unless this was done. Within the last three years she has grown somewhat better.

Examination showed a young woman, well built, rather large features, skin of normal tension and nutrition. There was some mild refractive error which has been corrected by the wearing of glasses. Examination did not demonstrate any so-called neurasthenic or hysterical stigmata. The reflexes were normal and no discoverable neurological symptoms were found. Thyroid gland was not enlarged and there was no suggestion of myxedema or acromegaly. The urine and blood examinations were negative. The patient has been placed upon static electricity and suggestive treatment, the course of her daily routine has been changed and she has improved very much and now bids fair to become cured of her disorder.

This case is interesting from many standpoints. While it is not uncommon to have a morbid sleepiness in neurasthenic and hysterical persons, and in some forms of brain tumor, it is rather unusual for a condition to have persisted sixteen years and then yield to treatment in the short period of two weeks. Another rather interesting feature of her disorder has been that for many years she has never been able to laugh audibly. She is usually of a cheerful, optimistic disposition, and while she would smile she would not laugh. This has since been improved very much and she is now able to laugh like any other person.

Dr. Carncross stated that he had seen a woman at the Polyclinic a few days ago who had a constant desire to go to sleep. She went to sleep in the morning and any time during the day. She did not rise at an unusually early hour in the morning and went to bed at six in the evening. She was extremely melancholy and had no ambition to do anything. She also had some peculiar ideas which Dr. Carncross did not remember; they were not very distinct.

Dr. Dercum said he thought we had all seen cases of sleep disturbance which approximate the case shown by Dr. Weisenburg. However, he did not recall a patient who slept as much as the young woman presented. He had had a young mulatto woman under his care who fell asleep under all sorts of conditions and circumstances. The case proved to be one of myxedema. It was an incomplete form of myxedema. It was one of the first cases he had ever seen and he did not at first recognize it. The patient got a great deal better under thyroid extract. It appeared to him that even cases which apparently are purely psychic, might also be benefited by thyroid extract. The latter seemed preferable to caffeine. It is

a cerebral stimulant and in sufficient dose will keep the patient awake. It should be started in moderate dose and gradually increased until some effect was noted.

Dr. Weisenburg thought that Dr. Dercum's suggestion of giving thyroid extract was a good one and he would act upon it. He thought the case was psychic rather than resulting from an organic cause inasmuch as he had been able to almost entirely cure her in a few weeks. He had used caffeine in very slight doses but had principally relied upon suggestive therapeutics. He had changed her whole course of life, regulated her habits and had used static electricity.

### TRAUMATIC HYSTERIA FOLLOWING WOUNDS IN THE HEAD

By Charles W. Burr, M.D.

The patient was a machinist, 33 years old, who was brought to the Philadelphia General Hospital, complaining of paralysis of the right leg and epilepsy. He stated that in 1900 he was shot in the head with a mauser bullet. The bullet entered the left temporal region and came out at the upper right side of the forehead. He was unconscious for seven days and in a hospital for fourteen months. He had no paralysis but after leaving the hospital began to have frequent attacks of what was diagnosed as epilepsy. After a time they became less frequent until finally they occurred only once in several months.

Three weeks before his admission to the Philadelphia General Hospital, he suffered a fracture of the vertex of the skull from a blow at the hands of a policeman. He became unconscious and when he came to himself, ten hours later, found himself in a hospital and learned that he had undergone an operation. He was paralyzed on the right side. Three days later he underwent another operation, the object of which, he was told later, was to relieve the paralysis. In about a week after the second operation he regained considerable power in his right arm but his right leg was unimproved.

*Examination.*—He is an intelligent man who answers questions clearly but volubly, plausibly, and at times, evasively. There are two scars corresponding to the points of entrance and exit of the bullet in the gunshot wound. There is a triangular recent surgical scar over the vertex of the skull and on the left side under it, a trephine opening.

There is no facial palsy. He moves the right arm and hand and fingers in all directions, but all movements are weak. There is no spasticity of the right arm and sensibility is normal. The right leg he does not move at all. The knee jerks are variable; sometimes the left, sometimes the right being more active. The legs are not spastic. There is no ankle clonus. Stroking the right sole anywhere causes slight, slow flexion of all the toes. Stroking the left sole anywhere causes quick flexion of all the toes and sudden withdrawal of the foot. There is complete anesthesia for touch, pain and temperature, in the right leg below the knee. The upper boundary of the anesthetic area makes an irregular circle around the knee. The area of anesthesia does not correspond with that found in disease of the spinal cord, brain, or peripheral nerves.

After he had been in the hospital a few days he had a convulsive attack which Dr. Burr did not see, but from the description of it given by the resident, it was hysterical.

Dr. Oliver examined the eyes and reports as follows: Perivasculitis with low grade neuritis on both sides, but more pronounced in the left eye. The left pupil is the larger. The irides are equal, mobile to light, accommodation and convergence. There are no coarse changes in the eye grounds.

A few days later he began to regain power in the palsied leg and now he can walk. In doing so he drags the leg stiffly behind him.

At first sight, and with the history given, one would think of an organic hemiplegia. The anesthesia, however, is surely hysterical and his gait is distinctly that of an hysterical paralysis. The slight changes in the eyes are probably due to the gun shot wound and to the fracture near the vertex. It is possible that he has had a slight organic hemiplegia with an hysterical hemiplegia added to it, but Dr. Burr was inclined to believe that the whole thing is a post-traumatic hysterical hemiplegia. He could not speak positively about the nature of the convulsions. Some are surely hysterical but it is very possible that others are genuinely organic.

### A BRAIN WITH EXTENSIVE UNILATERAL SOFTENING.

By A. C. Buckley, M.D.

The brain was that of a woman, aged 47, who had suffered from valvular heart disease for about two years, and about four months before her death suddenly lost the use of her right arm and became aphasic. Her spontaneous speech was limited to a few simple expressions as "good morning," "I can't see" (meaning "speak"), "yes," "no"; she named key, pencil, table, chair; to pronounce words was often an effort. Spoken language was apparently well understood and she could read to herself and could promptly correct mistakes when words shown to her were read wrongly aloud by others. She could recognize objects and could indicate their use though unable to name them. She could copy printed words and was able to arrange cardboard letters to form words, both being done with the left hand; there was inability to write the names of objects dictated.

The case appeared to be one of the motor type of aphasia.

Pathologically, there was a rather extensive softening, chiefly confined to the lower part of the central convolution, anterior to the central fissure. Broca's convolution appeared to have escaped. Posterior to the central fissure there was no softening of the ascending gyrus, but the inferior parietal was largely included in the process. The anterior end of the temporal lobe was also softened. The absence of auditory symptoms was doubtless to be explained by the fact that the softening in the temporal bone was evidently of much more recent occurrence than in the other areas and that it occurred during the last week of life, when, on account of the attack of cardiac failure, it was impossible to examine the patient for word deafness.

Dr. Dercum said that it was an interesting specimen because of the absence of involvement—at least by surface examination—of the third frontal convolution. Of course the brain has not been studied as yet and the exact depth of the lesion is a matter to be determined. It looks as though the occlusion of the middle cerebral had taken place beyond the branch which supplies the third frontal convolution, and yet this patient seemed to have had a motor aphasia plus, of course, the sensory phenomena which are usually present. It was a very interesting and important brain.

OPTIC NEURITIS ASSOCIATED WITH DISEASE OF THE  
FRONTAL SINUS AND ETHMOIDAL CELLS

By S. D. Risley, M.D.

Dr. Samuel D. Risley presented by invitation a paper on optic neuritis associated with disease of the sinuses contiguous to the orbits.

Dr. Weisenburg was very glad that Dr. Risley had presented his patient inasmuch as in the study of the case with him he had for a long time thought that the optic neuritis resulted from a brain tumor, which was difficult to localize because of the absence of specific symptoms. There had been present only the general symptoms of brain tumor, that is, headache, dizziness, some nausea, and at one time suspicion of a slight motor weakness. Dr. Weisenburg had advised a palliative operation because of the persistence of the neuritis. The case was very instructive to him because it showed that in the routine nervous examination of cases in which optic neuritis is present sinus trouble should not be forgotten.

Dr. Alfred Reginald Allen alluded to the possibility in cases such as those reported by Dr. Risley, where operation might not be advisable, of using the Stauungs-hyperemie. Von Schmieden and Meyer have had more or less success in clearing up troublesome conditions. Dr. Allen stated that he had a troublesome case. The idea of treating an optic neuritis by a Stauungs-hyperemie is almost homeopathic, but when you consider the subject it seems a safe plan to try, observing the disk from day to day to see whether you are doing any harm, because if you could prolong the treatment you undoubtedly would clear up the first etiological factor.

Dr. Spiller mentioned a case sent to him by Dr. Hosmer, in which a moderate degree of papilloedema, without other symptoms, suggested brain tumor, and spoke of the necessity of examination of the sinuses in such cases.

Dr. Hosmer stated that in a case referred to by Dr. Spiller there is a low grade bilateral optic neuritis.

On the right side disc margins are obscured with veins tortuous and very slightly over-distended; on the left side the picture is similar with, in addition, many small whitish areas of exudate or degeneration superficially set in that part of the retina arching the temporal side of disc. Etiology remains obscure. Dr. Spiller's findings were practically negative.

Dr. Edsall found evidences of intestinal putrefaction and indigestion.

Rhinological examinations by Dr. Ross Hall Skillern and Dr. Emma E. Musson gave: "Polypoid condition of middle turbinate and fibrous condition of posterior pharyngeal wall may indicate a previous or dormant sinus trouble." . . . "Frontal and antral sinuses normal. Some suspicion of roughness in right sphenoidal sinus. Anterior ethmoidal cells show marked denudation of mucous membrane, some roughening, on the left side granulation tissue. Only a very small amount of pus."

(Dr. Skillern's examination was interfered with by a fresh cold.)

Dr. Dercum said he would be pleased to have Dr. Risley say something about the mechanism of optic neuritis in cases of sinus disease such as he had described. The cases were, of course, instructive in many ways and chiefly instructive to the clinicians who have large amounts of material in their hospitals. The lesson is that cases are at times not studied as exhaustively as they should be.

In closing the discussion, Dr. Risley expressed his gratification that the subject and cases presented had proved of interest to the members of the society. He said that some of the inquiries which had been made would have been answered had time permitted the introduction of other cases which had fallen under his observation. He then narrated at some length the history of a patient in whose behalf he had invited a study by Dr. Mills, who found no evidence of intracranial disease. When first seen the man was blind in the right eye from atrophy of the optic nerve and  $V. = 6/60$  in the left, with contracted field and central scotoma. The frontal sinuses and ethmoidal cells were opaque to transillumination; the upper fossa in both nostrils were blocked by polypoid masses and had been for many years; he suffered from insomnia and severe fronto-occipital pain. The polypi were removed with a snare and profuse discharge followed, apparently from the frontal and ethmoid cells, but the man would not submit to amputation of the middle turbinates. After a few weeks treatment of the nostrils and the internal administration of strychnia and potassium iodide, vision in the left eye rose to  $6/xv$ , but no improvement in the field. No study could be made of the sphenoidal sinus without the removal of the large middle turbinates. He neglected local treatment and suffered a return of the complete symptom complex as soon as the drainage from the sinuses was interrupted and  $V.$  fell to  $6/60$ , as at first. He then went to Europe for treatment and after five months under the care of Prof. Pagenstecher, who regarded the optic nerve disease as the result of a gouty diathesis, the man returned totally blind and with advanced atrophy in the left optic nerve.

In reply to Dr. Dercum, Dr. Risley said he did not think that it was possible from the ophthalmoscopic study of the optic nerves alone to differentiate between optic neuritis due to intracranial disease and that belonging in the group under discussion. And to Dr. Spiller, that the last case reported pursued to all appearances the course of a simple atrophy. At no time was any swelling of the papille observed; nevertheless it may have been present at an earlier stage of its history. Regarding the suggestion of treatment to secure improved nutrition by increased blood supply, Dr. Risley thought that it would not prove useful until free drainage from the sinuses had first been secured.

## INDURATIVE HEADACHE (SCHWIELENKOPFSCHMERZ) WITH THE REPORT OF THREE CASES

By N. S. Yawger, M.D.

Indurative headache is of organic origin, chronic and usually paroxysmal, occurring in various parts of the head, and due to deposits at different points, chiefly in the muscles of the head and neck.

The disease has been recognized for years abroad, notably among the Swedes and Germans. References are made to the writings of Norström and Edinger, the latter being quoted as stating that this is probably the most frequent form of organic headache. The cases described are the first reported by an American physician, one being a history of his own attacks. It is sometimes called cephalalgia, cephalodynia, migraine, hemi-crania, cranial neuralgia and neuritis, and is due to a deposition at the insertions or within the bodies of the head and neck muscles. The deposition comes and goes at first and later becomes chronic, and when the chronic condition is present a headache may be brought on by fatigue, bad

air, chilly and rainy weather when it is sufficient to get within the outer limits of storm conditions and not necessarily within the area of rain fall.

Attacks are most frequent in the fall and spring. It seems likely that the condition is due to an excess of uric acid or an allied substance, and the subjects are often neurasthenic. The depositions are found present in three stages: (1) A swelling. (2) Resistance. (3) Induration. The longer they exist the firmer they become and the more resistance they offer to treatment. During the attack fever and redness are absent. It is said that all cases of headache should be examined by forcible flexion and twisting of the neck which will often bring out pain at the sites of these thickenings in the back of the neck. Exploration can be made advantageously during a paroxysm because the swelling and sensitiveness are then greater. The scalp should be thoroughly palpated for thickenings, irregularities, indurations, and nodules. Points of hypersensitiveness are frequently found in the trapezius, scapuli, splenii and sterno-mastoid muscles along the base of the scalp and adjacent parts of the neck, upon the spinous processes of the upper cervical vertebrae, and in the temporal and supraorbital regions. Many other muscles throughout the body may be invaded and cases have been mistaken for meningitis, appendicitis, sciatica, and deafness has been produced by pressure upon the Eustachian tubes.

The picture presented by lumbago is strikingly similar, inasmuch as it may follow exposure to cold, it may become chronic and offer resistance to palpation, it is relieved by pressure, there is an absence of fever and redness, and it yields to the same treatment. Persons having a tendency to these depositions should drink an abundance of water between meals, avoid fatigue, take out of door exercise, and if it is later proven to be due to an excess of uric acid or an allied substance, the diet should contain a low percentage of purins.

For a severe attack give a purgative, a hot bath, apply hot dry applications locally, and give repeated large doses of sodium salicylate, aspirin, or salophen internally.

For the removal of the indurations, massage and vibration are employed, the former being by far the more effective, and it will take from one to three months to remove the deposits. It is of advantage to use locally an ointment containing methyl salicylate and capsicum during the course of massage. The treatment is complete when the swellings have disappeared and tenderness no longer exists.

### THE SYPHILITIC FORM OF MULTIPLE SCLEROSIS

By William G. Spiller, M.D. and Andrew H. Woods, M.D.

The authors said that syphilis may bear a resemblance to multiple sclerosis both in its symptomatology and its pathology. One of them (Spiller) in association with Camp had reported a case which clinically appeared as one of multiple sclerosis from the symptoms of ataxia, intention tremor, scanning speech, pallor of the temporal side of one optic nerve and vertigo. Those who saw the case regarded it as one of multiple sclerosis, and yet the microscopical examination showed round cell infiltration and thickened vessels without sclerotic patches—the common findings of syphilis of the nervous system.

They proposed in this paper to consider the pathological aspect of the

subject, and to show that syphilis may cause sclerotic patches in the central nervous system resembling the degeneration of multiple sclerosis without necessarily producing the symptoms of the latter disease.

The symptom-complex of their case was one of spastic paraplegia of the lower limbs with contracture of the limbs and pain produced by passive movements of these limbs, probably because of the contractures; exaggeration of tendon reflexes in both upper and lower limbs, although the reflexes could not be well demonstrated in the latter because of the position of these limbs; and loss of control of bladder and rectum, with preservation of objective sensation. The typical symptoms of multiple sclerosis were absent as there was no mention of scanning speech, intention tremor, nystagmus, etc., and the diagnosis of multiple sclerosis was not made.

While the resemblance between the sclerotic areas in this case and those of ordinary multiple sclerosis was on superficial examination very striking, the two conditions differed in essential features. The round-cell infiltration of the pia; the gradual shading off of sclerotic areas into the normal tissue instead of the sharp line of differentiation; the vascular and perivascular sclerosis in regions of the cord where there was no distinct focus of sclerosis, indicated that the process was syphilitic and distinguished it from the disease known as multiple sclerosis. And yet it is well to bear in mind that in multiple sclerosis the definition between the sclerotic and normal regions is not invariably sharp, and that we may have thickened blood vessels within the sclerotic foci. The authors referred to the recent literature on the subject of their paper and gave as their conclusions from their investigation of the case reported in this paper and other cases:

1. Syphilis may in rare instances produce a symptomatology indistinguishable from that of typical multiple sclerosis, and this without the formation of sclerotic plaques, but by ordinary lesions of syphilis, viz., arteritis and meningitis.

2. Syphilis may produce sclerotic plaques in the spinal cord resembling those of multiple sclerosis, without producing the typical symptoms of the disease. These plaques have not the sharp definition seen in most cases of typical multiple sclerosis, and yet multiple sclerosis may exist without plaques sharply defined from the normal tissue. The syphilitic form of multiple sclerosis presents round cell infiltration of the pia and thickening of the blood vessels. Thickened vessels with a small amount of perivascular sclerosis will usually be found in certain regions without the formation of plaques. In some places slight neuroglial proliferation without thickened vessels may be detected, resembling in no way true plaque formation, but appearing more in the nature of slight diffuse secondary degeneration. Gumma also may occur in the brain. Secondary degeneration is more common in the syphilitic type, but does occur rarely in multiple sclerosis. Nerve fibers are not always completely degenerated in the syphilitic plaques. Careful and thorough examination will almost always, if not always, make a diagnosis possible between the lesions of syphilis and those of multiple sclerosis even though they may have a decided superficial resemblance.

DISEASES OF THE OPTIC NERVE AS AN EARLY OR EARLIEST  
SIGN OF MULTIPLE SCLEROSIS

By Alfred Gordon, M.D.

Dr. Gordon reported a résumé of his observations in 56 cases of insular sclerosis. In 23 of these cases the optic nerves were involved. In 5 optic neuritis or atrophy was the earliest or the only sign of the disease. Eighteen presented changes in the papillæ, together with other symptoms of multiple sclerosis. In 7 of these 18 retrobulbar neuritis was present at the beginning for a period of from two to five months and optic atrophy developed later. The chief interest of the subject lies in the optic nerve changes as a very early or the only symptom of multiple sclerosis. Dr. Gordon had the opportunity of studying 5 such cases. In the first 3 he could observe the gradual development of the cardinal symptoms of the disease four, twelve and one-half years and six months respectively after the changes in the optic nerves. He presented to the society two additional cases with a curious history of successive involvement of both eyes, and after a careful exclusion of other organic diseases, he pointed out the necessity of accepting the diagnosis of multiple sclerosis. Dr. Gordon emphasized the prognostic importance of the subject.

Dr. Gordon showed a precision esthesiometer devised by himself.

Dr. Price stated that McIntosh and Curschmann in a study of a series of cases of multiple sclerosis found that the earliest symptom the patients complained of was usually some form of motor disturbance. Müller has called attention to the fact that a frequent early symptom is what he describes as muscular fatigue. Very often there is optic atrophy without the patient himself being conscious of it. That may be due to one of two conditions, either that the onset of failure of vision is so gradual that it does not for a time attract the attention of the patient, or from the characteristic of the lesion, that is the tendency to involve the myelin sheaths and leave the essential part of the conducting apparatus, the ganglion cell and axis cylinder intact. In this way there may be considerable optic atrophy without corresponding diminution of vision.

Dr. C. K. Mills said that the instrument which Dr. Gordon had presented was quite ingenious. If he remembered aright many years ago there was a precision esthesiometer described, probably not exactly of the character of Dr. Gordon's, in which a certain length of the needle in making examinations was exposed. He could not recall the exact form of it. It was described, he believed, in an old Ziemssen's Cyclopedia, but whatever it was it never came into general use and he thought that Dr. Gordon's instrument would probably be of considerable value.

Dr. J. W. McConnell stated that there had been an esthesiometer devised with a needle attached to a spring, which worked with a scale on the side so that the pressure could be told by the scale.



# Periscope

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## Deutscher Zeitschrift für Nervenheilkunde

(Band 34. Heft 2)

1. Pathological and Clinical Report of a Tumor of the Medulla. WISWE.
2. Studies in Reflexes. Behavior of the Cutaneous and Tendon Reflexes in Infancy. Z. BYCHOWSKI.
3. The Strength of Hemiplegics. M. STERNBERG.
4. Meralgia Paræsthetica Anterior. W. LASAREW.
5. Segmentary Abdominal Paralysis. P. SALEEKER.

1. *Tumor of the Medulla.*—The writer reports a case diagnosed during life as tumor of cerebellum or cerebellar-pontile angle. The possibility of acquired hydrocephalus could not be excluded, owing to the peculiar cranial conformation and the duration of the symptoms. At necropsy a gliosarcoma of the medulla was found, causing marked enlargement of this structure.

2. *Studies in Reflexes.*—Since ontogeny, the evolution of the individual, is a portrayal of phylogeny, or the evolution of the race, a study of the reflexes should show in its ontological development a repetition of its phylogeny. In all theoretical hypotheses on the origin of reflexes, one must comprehend the fact, that all motor effects, now separated from the complete control of the will, phylogenetically arise from different offensive and defensive movements. If the reflexes, A, B and C did not develop simultaneously, and did not become automatic at the same time and, perhaps, have been separated through whole epochs, then must their ontogeny be chronologically different. To prove this Bychowski studied the relations of certain reflexes in infancy. In 100 children the tendo-patellar and tendo-Achilles, the upper and the lower abdominal and cremasteric reflexes were studied. The plantar was excluded owing to the complexity of the movements.

In this study certain precautions were taken to avoid error. Almost all were healthy children. They were studied by daylight, and in the waking state. Crying children were not examined on account of the difficulty in obtaining the abdominal reflex. Several examinations were made when the reflex was not obtainable. In the table presented, 67 cases of children under one year are given. The constant occurrence of the patellar reflex (only two cases showed failure and these children were sick) was noted, and the reaction was more active than in the adult. The Achilles tendon reflex was absent in 60 out of 64 cases under six months. After the fifth or sixth month it was more frequently observed. The abdominal reflexes also do not belong to the early months, but after the fourth or fifth month are more frequent. The same is true for the cremasteric reflex.

Bychowski concludes from this study that the patellar tendon reflex has a greater phylogenetic dignity than either the Achilles or the skin reflexes.

3. *Strength of the Hemiplegics.*—The writer studied the power in 27 hemiplegics, as shown by the dynamometer. The instrument used was especially constructed by him. The object of the experiments was to verify the findings of Pitres, as well as to study the effect of bilateral effort, simultaneously recorded in each side. Pitres in 1882 found on the healthy side a diminution of power, while bilateral effort caused an increase of power on the paralyzed side. Sternberg also found a diminution of power on the sound side, but on bilateral effort the results obtained on the paralyzed side were inconstant; sometimes increased, sometimes lessened, absent or changeable. Bilateral effort showed an inconstant result on the healthy side. This result does not substantiate Broadbent's theory, that bilateral effort should cause a diminution of strength on the sound side; and his theory of restitution in the paralyzed side through secondary assistance from the healthy hemisphere is not supported, according to Sternberg.

The writer offers the following theory to explain the results of simultaneous effort: The motor apparatus is bilaterally arranged, so that with movement of one half of the body exciting impulses and inhibitions are formed for corresponding movements of the other half of the body. By symmetrical and simultaneous innervation of both fists the inhibitory and stimulating impulses hold themselves in equilibrium in the healthy individual, while in hemiplegics this equilibrium is destroyed and a negative or positive simultaneous effect will depend as to whether the sum of the inhibitory impulses or exciting impulses prevail.

4. *Meralgia Parasthetica Anterior.*—While many cases of the Roth-Bernhardt symptom complex or external parasthetic meralgia are recorded, only three of the anterior parasthetic meralgia have been reported. Lasarew reports a fourth. The patient, a woman 20 years of age complained of pains only on standing or walking, confined to the region of the middle cutaneous nerve. Paresthesia and hypoesthesia were also noted. This case differed from the others, in that only the middle cutaneous nerve was involved.

5. *Segmentary Abdominal Paralysis.*—According to Oppenheim's experiment, the innervation of the abdominal muscles is multiradicular. Saleeker contradicts this statement, and reports two clinical cases, one with necropsy, to show the segmental innervation of these muscles. In the first case the patient, age 40, previously healthy, suddenly developed one-sided shooting pains in hip and leg, which later extended to the other side. Finally a gradual loss of power (extending over several months) occurred in both legs. The diagnosis, when syphilis had been excluded by the therapeutic test, was that of a spinal tumor from tenth or eleventh thoracic to the third sacral segment. This localization was based upon the following findings: Sensation was lost below the eleventh thoracic segment, the lower abdominal reflex was absent, and the lower one third of the oblique showed atrophy and reactions of degeneration. The upper and middle abdominal reflexes were intact, and the rectus and upper one third of the oblique reacted well to the faradic. The bladder and rectum were intact, as was also the anal reflex.

Operation revealed an intramedullary glioma which had almost destroyed the lumbar region. The anatomical findings showed total atrophy of the anterior horn cells in tenth, eleventh and twelfth thoracic segments. The author places the center of the lower one third of the oblique and also the lower abdominal reflex in these segments. The rectus is higher up.

In his second case, one of traumatism to the cord, he found the abdominal muscles affected as follows: Lower one third of the left rectus, both lower portions of the left oblique and the lowest one fourth of the right oblique showed partial paralysis. Both lower abdominal reflexes were lost, as well as the middle abdominal reflex on the left side. The diagnosis was a lesion from the tenth thoracic to the third lumbar.

In conclusion the writer says: (1) Not only total but partial paralysis of the abdominal muscles occurs in disease of the spinal cord. (2) The innervation is not multiradicular, but segmental. (3) The nuclei of the recti do not extend so far backward as those of the oblique muscle. (4) The individual abdominal reflexes correspond to definite segments of the spinal cord. (5) Observation of segmentary abdominal paralysis is in conjunction with the sensory and reflex disturbance of importance for localization in the thoracic region.

S. LEOPOLD.

### Review of Neurology and Psychiatry

(Vol. VI. No. 1. 1908)

1. Pseudo-Myasthenia of Toxic Origin (Petrol Fumes). SIR WILLIAM R. GOWERS.
2. A Note on the Condition of the Post-central Cortex in Tabes Dorsalis. GORDON HOLMES.
3. Clinical and Anatomical Diagnosis of the Ankylosing Diseases of the Spinal Column. ANDRÉ LERI.

1. *Pseudo-Myasthenia of Toxic Origin*.—Gowers reports the case of a man, age 38, whose occupation was testing petrol engines in a government factory. He was constantly exposed to the fumes of burned petrol, sometimes imperfectly burned. The symptoms were, more especially, a quickness of exhaustion of the muscles of speech, a feebleness of deglutition, weakness of the orbicularis palpebrarum, and a peculiar smile. Electrical reactions, reflexes and sensation were all normal. The patient recovered under strychnia, but returned to his work, and at the end of a period of less than a year was again treated by Sir William for the same symptoms and again recovered, and on relinquishing his occupation he has not again relapsed. The nature of the products of the imperfect combustion of petrol and their deleterious character are unknown.

2. *Condition of Post-central Cortex in Tabes Dorsalis*.—Holmes takes issue with A. W. Campbell respecting the post-central cortex in tabes; and maintains that we have as yet no proof that the center for "common sensation" is co-extensive with the distribution of any type of cortex, or with any structural area. Holmes examined the brains of four tabetics. Campbell found a difference between the structure of the anterior wall and of the summit of the post-central gyrus, due he thought to pathological changes of the former, in three cases of tabes. Holmes failed to find any evidence of pathological change in either area in his tabetic brains.

(No. 2. 1908)

1. Clinical and Anatomical Diagnosis of the Ankylosing Diseases of the Spinal Column. ANDRÉ LERI (concluded).
2. The Epiconus Symptom-Complex in Cerebro-Spinal Syphilis. W. G. SPILLER.

1. *Diagnosis of Ankylosing Diseases of the Spinal Column.*—The writer differentiates spinal rheumatism, *spondylose rhizomélisque* and hereditary traumatic cyphosis, and also certain other conditions, grouped under one general heading (about which little is known), such as gout of the spine, syphilis of the spine and senile cyphosis. Rheumatism of the spine, characterized by osteophytes, is evolved by a succession of attacks and commences in the small joints of the limbs. Its subjects are usually elderly. *Spondylose rhizomélisque* affects male adolescents or young adults under 35 or 40. There is a history of tuberculosis or, more commonly, of gonorrhea. The small joints are rarely, if ever, attacked. The large proximal joints (the hip, and later, the shoulder), become seats of the disease, and ankylose. Spinal ankylosis begins in the lumbo-sacral column and is preceded by violent and persistent pains. The cervical region is then attacked by pains and ankylosis, and subsequently the entire spine becomes affected. Hereditary traumatic cyphosis occurs in the elderly whose antecedents had a tendency to abnormal spinal curvatures, cyphosis or hunchback. The patient has usually fallen on his back while carrying a heavy load, or a weight has fallen on his back. After a few months a marked dorsal convexity of small radius appears, ankylosis having taken place at the level of the convexity. All the other joints of the patient are intact, and, in short, this cyphosis behaves like a local accident and not like a general disease. Signs of compression of the cord may appear in rare cases of hereditary traumatic cyphosis.

Space does not permit of the reproduction of the writer's anatomopathological diagnosis and pathogenesis of the different forms of ankylosing diseases. The article is illustrated by a number of excellent photographs. The writer intimates that the study of spinal ankylosis is yet only at its commencement, but suggests that some important and precise therapeutic indications, both medical and surgical, are deducible from present knowledge.

2. *The Epiconus Symptom-Complex in Cerebro-Spinal Syphilis.*—Spiller gives a detailed account of the ante- and post-mortem findings of a case of cerebro-spinal syphilis giving rise to the epiconus symptom-complex. The noteworthy features of this rare case were: a bilateral palsy of the peronei without involvement of the tibialis-anticus muscles; weakness of the flexors of the legs and extensors of the foot; disturbance of objective sensation in the distribution of the first and second sacral roots or peroneal supply; loss of Achilles reflexes; later, loss of plantar reflexes, and preservation of patellar reflexes and of the function of the bladder and rectum. These symptoms occurred in a man clearly affected with syphilis of the nervous system, as shown by the history and cerebral manifestations and pathological findings. The writer differentiates neuritis in the case and also root involvement, but leaves us a trifle uncertain in the end, as to whether after all he is unwilling to say it might not have been a case of syphilitic multiple neuritis occurring with syphilitic meningo-myelo-encephalitis. The very few cases in the literature of epiconus lesions have been due to trauma. In Spiller's case, there was no trauma; the symptoms developed rapidly; dissociation of sensation was not present. Death was preceded by cerebral hemiparesis.

The special microscopical examination of the lumbo-sacral cord showed that while sections from the third lumbar region showed practically normal anterior horn cells, sections from the lowest lumbar and sacral regions showed these cells intensely degenerated. Both posterior

columns were degenerated in the lower lumbar and upper sacral regions. The right and left peroneal and plantar nerves showed some degeneration, and muscles attached to these nerves were much atrophied.

Spiller also reports two other cases presenting the epiconus symptom-complex in one of which the Achilles tendon reflex was preserved, and he suggests that this may indicate that the centers for this reflex are at a higher level.

C. E. ATWOOD (New York).

### Zentralblatt für Nervenheilkunde und Psychiatrie

(Vol. XXXI. April 1, 1908)

*Apropos of Interchange of Inhibition of Thought in Congenital Intellectual Defectives in Prison Psychoses.* RISCH.

Risch reports clinical records of six patients who developed a psychosis synchronously with their prison confinement. All of them showed psychopathic stigmata. Some manifested incapacity for maintaining their social positions in life. The relation of the mental disorder to the psychogenetic shock—prison penalty—was striking. The characteristic symptom of the disease picture was *thought inhibition*. The patients were unable to answer simple questions, do easy calculations, or solve plain problems. Quite often intelligent answers were interchanged with stupid ones. While patients were under examination thought inhibition was more pronounced. Although they could not do simple arithmetical tasks yet they could play cards and keep scores correctly. Their expression was sad and this bore a direct ratio to the inhibition of thought. They were usually confused, depressed and apprehensive. As a rule they were easily calmed and induced to associate with their fellow patients. They would become readily accustomed to their new environment and orientation would rapidly improve. Delusions and hallucinations were accompaniments.

In regard to classifying this interesting symptom complex, the author holds that it should be recognized as a distinct clinical reality *per se*, occurring in constitutional defectives reactionary to psychogenic factors. Hysterical psychosis is excluded inasmuch as the disease picture lacks definite physical stigmata and other symptoms peculiar to such a reaction.

(Vol. XXXI. April 15, 1908 and May 1, 1908)

1. Serum Diagnosis in Syphilis. E. PLAUT.
2. Contribution to a Critical Examination of the Relative Value of Differential Diagnoses of Lumbar Puncture. (Continued in May 1, 1908.) F. CHOTZEN.

1. *Serum Diagnosis.*—Plaut states that according to various statistics 80 to 90 per cent. of cases of syphilis give a positive serum reaction. However, he emphasizes that by this method we are only enabled to ascertain the syphilitic constitution but not to localize the disease process. In the secondary manifestations the percentage is very high; in the tertiary and latent lues the figures are low; in the primary stage the reaction is rarely positive. In twenty-five cases of syphilis of various stages, without neurological complications, antibodies were not found in the cerebro-spinal fluid, but serum reaction was positive with a few exceptions. In syphilitic affections of the central nervous system, cerebro-spinal fluid is

free from anti-bodies, but they are present in the blood. In metasymphilitic diseases like paresis and tabes anti-bodies are demonstrated in both cerebro-spinal fluid and blood. In 95 cases of paresis which Plaut examined, cerebro-spinal fluid, except one, gave positive findings. In tabes the percentage is lower, only from 70 to 80 per cent. These extremely interesting results show that lues is the cause of paresis. Serum diagnosis in psychiatry is of great importance in as much as we are enabled to determine the syphilitic genesis in the various forms of mental enfeeblement in childhood. Likewise syphilitic arterio-sclerosis, cerebral lues, etc., can be separated from paresis. The author offers a critical review of the various methods employed in serum diagnosis, and finally concludes that Wassermann's original method is the most reliable one.

2. *Differential Diagnoses.*—Chotzen made 125 lumbar punctures in 117 patients suffering from various forms of mental diseases and his results may be tabulated in the following manner: *Paresis.*—Eighty cases (97 punctures)—3 punctures were negative but later the results were positive. In one case, lymphocytes were only slightly above normal and albumen was increased (this patient was undoubtedly a paretic). One of Kunther's cases, several examinations of cerebro-spinal fluid were negative, and only later it showed a very slight increase. However, necropsy revealed a typical paretic process. Only in two instances albumen was absent while a lymphocytosis was marked. Four supposed paretics had no lymphocytosis, hence they were excluded from the series.

*Tabes with Psychoses.*—Three cases. In two lymphocytosis, one marked, the other slight, both had no albumen, and the third albumen only.

*Various Forms of Organic Diseases.*—Twenty-seven cases (32 punctures). One case of cerebral lues showed no lymphocytosis on two examinations. One amyotrophic lateral sclerosis with psychical disturbance in an old luetic, few lymphocytes and moderate albumen were present. Two cases of cerebral infantile paralysis, no lymphocytosis. One lobular sclerosis with epilepsy (Jacksonian type), was negative. One case of cerebral tumor (temporal region) gave a positive reaction. One case of acute apoplexy, fluid was bloody. Four cases of meningitis (one purulent, one epidemic, two tubercular)—in the first polynuclear elements predominated, in the last two polynuclear and lymphocytes were increased. Albumen was present in all of them. Arterio-sclerosis with hemiplegia or multiple foci—12 cases (15 punctures). One had an increase of cells and the albumen was not examined; in another albumen was present but no lymphocytes; in one with recent lues, both lymphocytosis and albumen were demonstrable; in one with old syphilis, lymphocytes were slightly increased and albumen was absent. Three cases of diffuse organic diseases of an unknown genesis, five lumbar punctures were negative. In one case of traumatic pseudo-paresis, the cerebro-spinal fluid was negative.

*Senile Psychosis.*—Seven cases—only in one (old puella) slight lymphocytosis was shown.

*Alcoholics.*—Thirty-five cases (37 punctures). Chronic alcoholism—3 with 3 negative results (two have had lues). Five cases of delirium tremens had negative findings. One case of protracted delirium had a slight increase of albumen (syphilis). Delirium tremens gravis, 8 cases, 9 punctures; 7 of them were negative; one revealed abundant leucocytes in presence of meningeal infiltration (puella); in another slight increase of large pale granular cells without albumen. Of the seven negative cases five showed the presence of albumen.

*Korssakoff's Psychosis.*—Fourteen cases (15 punctures). In one case with focal symptoms, there was a lymphocytosis, but cause of it, could not be ascertained—necropsy was refused. (This case should not be included.) In another instance albumen was found but no lymphocytes (the patient was epileptic); 2 cases of alcoholic cachexia and one of acute hallucinosis, the cytological examination was negative. One case of hallucinatory enfeeblement (arterio-sclerosis) lymphocytosis was mildly increased and albumen was not ascertained.

*Infective Exhaustive States.*—Acute delirium, asthenic delirium, etc. Six cases (7 punctures): in one case albumen was present and in another both lymphocytosis and albumen were demonstrated. The patient suffered from chronic phthisis and was not syphilitic. Autopsy could not explain these findings.

*Dementia Praecox.*—Thirty-two cases (35 punctures). In two cases lymphocytosis and albumen were found. In one only albumen was present. All these patients were infected with lues. Another case with probable history of syphilis albumen was positive.

One manic depressive insanity—puncture was negative.

Four degenerative psychosis—results were negative.

Three imbecility—also negative.

Nine epilepsy (genuine and traumatic). In 3 lymphocytosis was elicited; one man was positively syphilitic; one woman probably luetic; in the traumatic cases albumen was absent.

The author decries the French method of cytological examination and offers his own. He takes .2 c.cm. of cerebro-spinal fluid and divides it with a fine pipette into four equal parts on four cover slips (10×10 c.mm.) and after drying, fixing, staining, etc., the cover glass is placed in Ehrlich's counting chamber and examined with a microscope. 1–2 cells in a c.mm. is normal; 2–4 cells cannot be regarded pathological; a slightly positive reaction is from 6–10 cells and in general paralysis the cells vary from 6–106. Chotzen maintains that one puncture in doubtful cases is not sufficient. The presence of albumen and lymphocytosis should not be regarded as confirmatory evidences of the disease, but they are only of value in conjunction with other symptoms. The absence of either lymphocytosis or albumen speaks in favor of syphilitic arterio-sclerosis, a cerebral syphilis and tabes with psychosis. In the early stages of syphilis one may find both albumen and lymphocytosis, later either one disappears, and finally both are absent. He discusses the usual precautions one should take in this operation.

The after effects of lumbar puncture are slight and only in 22 of his cases some symptoms were observed. In three patients, however, striking manifestations after the puncture were noticed. One had hysterical paralysis, the second suffered from jactation with slight numbness and the third collapsed because a large quantity of fluid under great pressure was removed, but this was not fatal. In all of them the symptoms were only transient.

KARPAS (Ward's Island).

### MISCELLANY.

A NEW CASE OF HYPOPHYSIS OPERATION IN DEGENERATIO ADIPOSE-GENITALIS. v. Eiselberg and v. Frankl-Hochwart (Wiener klin. Wochenschrift, July 30, 1908).

The authors report a case of angiosarcoma of the pituitary body re-

moved by the nasal route, with much improvement in the condition of the patient. This, with a previous case reported by the same authors, and one by Schloffer are the only cases in which this nasal operation has been performed on tumor of the pituitary body with general adiposity and arrest in the evidences of puberty. It has been attempted in acromegaly.

SPILLER.

SEXUAL SCIENCE AND GENERAL MEDICINE. Rohleder (*Journal für Sexualwissenschaft*. 1908. No. 2).

The author considers "the sexual science and its significance for the general practitioner." He deplores the lack of interest and knowledge among general practitioners in every-day sexual questions. It is impossible for the practitioner to familiarize himself with all subjects appertaining to the sexual science. It is very broad and embraces not only the ordinary subjects of the medical curriculum but also zoology, anthropology, ethnology, etc. The author hopes that the day will come when the importance of the subject will be recognized and special chairs of sexology will be endowed. Among the problems to be considered are: The physical processes of puberty—menstruation in the girl and pollution and masturbation in the boy—and the psychic disturbances connected with them, such as hysteria and epilepsy; the sexual life after matrimony, its hygiene, etc., and the sexual life of unmarried people. All these are problems of normal sexual life with which every physician ought to be perfectly familiar. Among the abnormal sexual processes the author mentions dyspareunia (frigidity). He claims that now and then such cases are seen but are not recognized. The main symptoms are flabbiness of the genitals, marked discharge (not gonorrheal), metritis and sterility. Such patients generally go from doctor to specialist and from specialist to professor without any results. Patient is either ashamed to admit that she is frigid *apud coitum* or she is unconscious of it, and only by the intervention of a third—house friend—an orgasm is brought about which cures the dyspareunia and sterility. Thus the sexual drama is brought to a sad ending simply because no doctor thought of that possibility. The neuroses due to excessive sexuality and sexual abstinence should be studied. Erb was the first to recognize the injurious effects of sexual abstinence, and Markuse goes so far as to recommend coitus as a therapeutic agent in unmarried women of the best families. Coitus interruptus is also responsible for many nervous disorders. The author then criticizes the Paragraph 175 of the German statutes.

The questions are only superficially considered but they are interesting and give material for reflection. A. BRILL (New York).



## Book Reviews

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PSYCHE UND LEBEN. Von Prof. W. von Bechterew, Professor der Kaiserl. Medizinischen Akademie Institute St. Petersburg. Wiesbaden, J. F. Bergmann, 1907.

Attempts to subject psychical life to the law of maintenance of energy have repeatedly been made, yet without success. Grote holds that one can be transformed into the other.

In the first part of the book the author deals with the nature of mind from a philosophical viewpoint—dualism, monism, platonism, Descartism, and so on, and throughout seeks to demonstrate the close relationship between mind and life. They are both expressions of nerve energy. The organism with its life activities and physical arrangements can be looked at from a purely biological viewpoint as combined systems of movable organic connections, whose cardinal functions, irritation and change, rest upon the liberation of energy, the stock of which is continuously replenished in the organism and central nervous system.

The author maintains that psychical activity is always accompanied by objective changes in the nervous reticulum. The study of psychical phenomena should be understood as part of biological science, as to the objective examination of the organism and its functions. Mind and life in their relativity touch the important sides of our world contemplation, and without which neither biological research nor psychology can proceed. In this sense the author thinks facts, which modern science proves, as to the relation between mind and material should be carefully submitted to study.

S. D. LUDLUM.

LA SIMULATION DE LA FOLIE. Par A. Mairret, Pressur de Clinique des Maladies Mentales et Nerveuses a l'Université de Montpellier. Pp. ix + 319. Montpellier, Coulet et Fils, Éditeurs; Paris, Masson et Cie, Éditeurs, 1908.

This work starts off with an historical account which rather strangely consists largely of a discussion of the mental condition of Hamlet. The author reaches the conclusion that he was an insane simulator. It is at least refreshing to have a somewhat novel point of view offered from which to consider this wonderful dramatic character.

From the historical part on the work consists of an eminently sane and well balanced discussion in detail of the whole subject. Each form of mental disturbance is considered separately as well as the points of doubt in diagnosis and the methods of uncovering the deception. It is somewhat significant with regard to this last that while threats, pain, trickery, persuasion, anesthesia, etc., are all discussed, no mention is made of the application of the association tests about which so much has recently been written.

The work, while not a profound or learned treatise, is a most excellent bringing together of the matter of which it treats and is well worth while as a reference book for the library of those engaged with medico-legal problems.

WHITE.

TETANY IN THE ADULT. By Dr. L. von Frankl-Hochwart. Second Edition, thoroughly revised. Alfred Holder, Vienna and Leipzig, 1907.

The occurrence of tonic, intermittent, bilateral, often painful convulsions or spasms, with preservation of consciousness in an individual is the symptom-complex of tetany.

In this second monograph of the author no change is shown in the fundamental concepts of tetany, a disease rarely seen in this country. Many new cases are reported to substantiate his former views. An entirely new feature is the review of the work on parathyroids, their anatomy, physiology and relation to the tetany of thyroid strumipriva.

Vassule and Generale experimenting on rats and dogs found that complete removal of the parathyroids produced a fatal tetany. This occurs irrespective of the presence or absence of the thyroid gland. The parathyroids probably produce an antitoxin, the loss of this capacity producing convulsions.

After discussing the work of Pineles, Erdheim and others, the author concludes with the following significant statement: "That the term parathyroid tetany is preferable to the term thyroid tetany."

With regard to the etiology of the idiopathic and other forms of tetany, much is yet unknown. The author is not yet willing to agree with some writers as to the parathyroid hypothesis. One still must search for the essential or exciting noxa.

The constant occurrence of tetany during March and April, its occurrence in special localities, give the idea of special agent, perhaps an infectious organism of especial interest in the relationship of tetany with epilepsy, myelitis, cerebellar tumor and hysteria. The writer has frequently seen cases in which the symptom-complex could be viewed as a "forme fruste" of Basedow's disease.

The chapters on symptomatology, diagnosis and pathological anatomy, show some changes, while that on prognosis has been somewhat revised. Partial removal of the thyroid ten years ago was wrought with much danger, to-day it is not to be feared. The most severe form to-day is tetany in association with gastro-intestinal disturbance. Formerly the pathological changes were supposed to be located in the brain and spinal cord; especial emphasis was laid by the author on the spinal cord in chronic tetany. In this new edition the importance of the thyroid apparatus is emphasized, though he shows in some cases that tetany may occur with no changes in the parathyroids.

A somewhat more favorable tone is noted in his remarks on therapy. He cites Vassule's good results, with parathyroid antitoxin, in eclampsia, and tetany of childhood, Marinesco's in tetany associated with Basedow's disease. His own results in five cases of idiopathic tetany have been negative. The bibliography has been revised to date. In view of the absorbing interest aroused by the recent study of the parathyroids, this monograph, a classic in its scope and clearness, should prove a valuable link in the study of this disease and those closely allied states, epilepsy, paralysis agitans and Basedow's disease.

S. LEOPOLD.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### ADDRESS TO THE AMERICAN NEUROLOGICAL ASSOCIATION\*

BY THE PRESIDENT, S. WIER MITCHELL, M.D., F.R.S.

FOREIGN CORRESPONDING MEMBER OF THE FRENCH ACADEMY OF MEDICINE

If I had anticipated how serious would have become to me the responsibility of addressing you as your president, I should have accepted with even greater reluctance this honoring office. The men gathered here to-day constitute a group of physicians who without flattery may well be called remarkable. Your books and papers are in many languages; your contributions to the art of medicine and to the sciences on which it relies for growth and useful additions are known and valued wherever good work is esteemed.

A variety of temptations assail the man to whom you confide the privilege of uninterrupted speech, and I for my part have had much hesitation concerning what I should endeavor to set before you. I begin by assuming leave to be at will digressive:

And first, before venturing on more difficult ground, I would remark upon certain matters to which I am inclined to call your attention. One is the rarity in your proceedings of matters of therapeutic interest. This applies elsewhere as well as to you, but may be due to the fact that the therapeutics of neural maladies has made no such advance of late years as has the art of the surgeon. The present is the triumphant hour of diagnosis, and this is after all the parent of logical legitimate therapeutics. Amid enormous gains in our art, we have sadly

\* Read at the thirty-fifth annual meeting of the American Neurological Association, held in New York, May 27, 28 and 29, 1909.

to confess the absolute standstill of the therapy of insanity and the relative failure, as concerns diagnosis, in mental maladies of even that most capable diagnostician, the post-mortem surgeon. I am satisfied, from many facts in cases of depressive and other manias, that somewhere in remote toxic products—outside of the brain—glandular or other, we shall one day detect the secret cause of a proportion of what we label insanities. The last forty years have at least taught us that the asylum is advisable only when poverty or extreme peril leaves no other resource.

I am most desirous that both the physiology and pathology of the negro should receive from the neurologists of the South such attention as has been given to his anatomy. Long ago it was made clear in my clinic that the negro is comparatively immune to chorea, and that despite his frequency of syphilitic infection, he is very rarely the victim of spinal tabes. I have some reason to suspect that he is less subject to migraine than is the white man; and finally, I have gathered evidence, as yet unpublished, that in the pure black exophthalmic goiter is exceptionally rare.

Concerning the relation of the black skin to heat and light rays, there must be in the negro some compensative automatic mechanism for regulating body temperature other than that which we possess. We need a new and full study of the blood in the negro. Why is he relatively to the white immune to yellow fever; would his serum protect; and why is he less susceptible to malarial fever than the white? The explanation of these insusceptibilities should challenge the attention of the tropical bacteriologists. What too can be learned of the pigments of the negro and of the relation of the suprarenal capsules in him to pigmentation? Does the black ever have Addison's disease? I saw, years ago, a negro in an extreme state of weakness who was spotted with large islands of white skin. The general symptoms suggested Addison's malady, but he disappeared from my clinical horizon, as interesting cases are apt to do.

Another untouched subject which concerns us might well be handled by a commission. I refer to the physiology of persons who have lost large parts of the body by multiple amputations. In these cases the temperature, pulse and blood pressure should reward careful research. Long ago I studied the diseases of stumps and the psychics of lost limbs, but I am not so vain as to think no one can better my work, although one eminent psychologist has confessedly failed to do so.

Leaving here these lesser matters, I turn to the first of the main subjects to which I ask your attention. In the more recent physiologies the chapters on the nervous system begin with a frank confession of ignorance concerning the nature of the excitatory nerve impulse. It has long puzzled the physiologist, illustrated ingenious failures, and found no place in the text-books of neurology. So utter is the laboratory's defeat that we too have accepted the consequence and scarcely even think of it in connection with the many diseases in which it plays so large a part.

A dozen labels record once confident theories as to the nature of this transmitted impulse which, without committal to any hypothesis, I shall for convenience call neural energy. The essays which report the laboratory on this matter might bewilder the most clear minded.

It is, I think, unfortunate that the transmission of energy in both animal and plant should not have been studied in comparison with the forms of exterior physical energy by some of the great masters of physics. To clear the ground, and at the risk of restating the familiar, let me say a word of what little we know, with more or less of certainty, of the phenomena of transmitted energy in plants and animals, and some of its comparative relations to the physical energies of the inorganic world.

The higher animal has ganglionic storehouses of potential energy which can by nerve tracts reach muscles and become kinetic. The nature of the energy thus transmitted is what I now ask you to consider with me. Setting aside the many other errands of this missive energy, let us dwell somewhat on its relation to muscular motion.

Conduction of energy along nerves to muscles was once crudely demonstrable through the visible responses of irrito-contractile muscle-tissues or by the accident of a severed nerve. The demonstration that the passage of energy gives rise to measurable electric signals by degrees reopened the way to new studies of this molecular change. In reminding you of familiar facts I am not without distinct purpose.

When we approach the study of the transmission of energy in its relation to animal structure, it is interesting to observe that in the lowest animal form—such as the *amœba* of the protozoa—there is, on stimulation at any point, a diffused transmission of energy through all parts of this unicellular body. It is like the excentric waves from a stone let fall in water.

Without troubling my text with needless names, I may say that in some higher creatures, as also in the fetal heart, irrito-contractile cells appear to have conductive functions as well as contractile power.<sup>1</sup> In the next higher sub-types<sup>2</sup> we may still have the diffused response, or in some classes at last preferred paths, until we come to creatures whose sole mode of conduction is along distinct nerve ways. As these nerve tracts become more and more definitely developed, the ganglion storehouses of potential energy become more numerous and of increased importance.

My object being rather to comment on acquired knowledge than to hope to add, I shall but venture to call attention in our interest to the rate of transmission of nerve energy and to point out that when it is mere diffusion, as in *amœba*, it is at its slowest (0.93 m.) three feet per second, and that in the higher vertebrates it is at its ultimate centrifugal rate of about (31 m.) 100 feet to the second, and on centripetal missions (47 m.) 150 feet to the second. The finer the organization the quicker the rate. It is as when in a wild land a man wanders unguided until with the trail, the path, the road and the railway his movement becomes more rapid as the ways on which he may move are defined. It is probable that in many diseases the rate of transmission of energy accepted as normal varies. This is an almost unexplored subject. Is the speed slower in some asthenias? That would be worth knowing. In certain spinal maladies several seconds may be required before the mind becomes conscious of a sensation of touch.

I just now said that the higher the organization the swifter is the rate of the movement of energy along nerves. This may be true of the trained individual as well as of the genus. He who watches the quick decisions and rapid actions of the best base ball players may well suspect that the nerves as well as the mind may share in the acquisition of exceptional rate of transmission of orders to the muscles.

The highest speed as yet assigned to neural transmission in health must be far below the speed of the impulses productive of the most rapid speech, viz: 250 words a minute. I suspect that also in the juggler and the practical pianist our accepted maximum may be much exceeded. I am here tempted to discuss the

<sup>1</sup> Metazoa—multicellular creatures of low type belonging to the Cœlenterata.

<sup>2</sup> Cnidaria.

matter of the enormous output of energy relatively to the small size of the productive sources of supply, but must leave this to a note<sup>3</sup> which I owe to Professor Donaldson's kindness.

Next, using only what concerns us, let us follow the outgoing energy on its way to the irrito-contractile muscles, setting aside its numberless other errands. It is admitted that the muscles may become exhausted and at last refuse to obey either the will or the electric stimulus.

It has long been accepted as proven that the nerves do not exhibit fatigue by any failure to respond to such electric excitation as does not obviously affect the integrity of their tissues. Were this true they would in this resemble the metal wire, which no length of employ as a conductor of electricity in any way alters. As to nerves I have long distrusted the decisions of the laboratories in this matter. Of late they are beginning to revise their beliefs. Even though we admit that electricity, the only excitator available for experiment, does not obviously exhaust nerves, we are far from knowing whether the normal nerve energy of the will may not do so. It is for us a question of practical moment.

In any distinct asthenia we should be able to answer certain questions. Is it muscular? Is it neural? Is it a ganglionic defect due to failure to store and restore the material for the production of potential energy? Or what combination of these possibilities have we to deal with?

Many agencies affect these delicately responsive neural conductors and their related centers. The one which is most common is variation in the atmospheric pressure in association with other storm conditions, such as humidity, heat, electricity, and the

<sup>3</sup>"I should like to emphasize the fact of the small amount of substance composing the cell bodies of the nervous system, indicating, as this does, how trifling in amount must be the metabolic changes in these master cells.

"At the same time these cell bodies give rise to fibers (that is the axone surrounded by its medullary sheath).

"I have been able to determine that in the peripheral system the volume of the sheath and the volume of the axis are equal to one another, so that one-half of the substance of a peripheral nerve, excluding the connective tissue, etc., is composed of axone substance. (See Donaldson and Hoke, 1905.) Unpublished observations by Donaldson and Hatai show the same relation to be true for the nerve fibers in the central nervous system.

"It follows from this that, on the average, each cell body is connected with a mass of axone substance about twenty-five times its own volume. This represents a set of anatomical conditions which are in need of detailed investigation."

ozone of the atmosphere. I know of but two essays on this subject in which the matter is placed on a scientific basis. Indeed we are very ignorant of the means by which, in rheumatisms and spinal maladies, in neuralgias and megrims, storms seem to increase pain or to determine attacks. We are but little wiser<sup>4</sup> than Jenner when he wrote verses about the "Signs of Rain":

"The hollow winds begin to blow,  
The clouds look black, the glass is low;  
Hark! how the chairs and tables crack!  
Old Betty's joints are on the rack."

So far the laboratories have failed to find proof that chemical changes accompany the transmission of neural energy along nerves. This decision is one which the laboratory of the mind refuses to accept as final. These living wires, the nerves, eat, drink and eject, are fed and do work, and must therefore undergo chemical changes through loss and for repair. We have as yet to admit the amazing fact that during the most violent functional excitation of a nerve no rise of temperature can be detected. Admitting that there must be chemical activities during the transit of energy, this becomes the more remarkable. That, however, such chemical reactions may occur as are of a nature to lower rather than to raise the local temperatures may not be an altogether absurd conjecture.

In our search for the nature of the molecular disturbance which we call nerve energy, it is interesting in passing to mention certain peculiarities which appear more and more to make it seem remote in quality from the ordinary physical energies. Thus, no evidence exists to prove that a nerve in action affects by induction a nerve beside it. Nerves do not appear to leak energy as do electric wires, and the avalanche theory of their gain in power during the passing of energy has been, I believe, disproved. It is of course familiar that many drugs destroy conductive capacity, as does the least break in a nerve, or pressure, or freezing. Yet even these facts which make for dissemblance are not all of them certain, and almost any statement I have had to make illustrates the insecurity of our present knowledge.

<sup>4</sup>With the aid of government weather maps it would not be difficult to obtain fuller information concerning the influential effect of the weather on many disorders. An excellent study of the influence of storms on the production of rheumatism, by Morris Lewis, is an illustration of what may yet be done.

See also case of Captain Catlin, *Am. J. Med. Sci., N. S., Vol. LXXIII*; and *Tr. Phila. Col. Phys., 3 Series, Vol. VI*.

See also papers on Chorea by S. W. Mitchell and Lewis.



We come at last to ask whether the transmission of stimulus to muscles, of inhibitive impulses, of vascular and glandular excitations be by a mode of physical energy only exhibited through organized tissues, or by a system of minute, swift, orderly chemical interchanges, themselves the parent cause of the electric phenomena which signal the passage of a form of energy along a nerve.

There is much in all these facts to make us doubt if neural energy be at all like the great exterior physical energies such as electricity. But whatever be this transmissive impulse in animal life, chemical or physical, the primary determinative agencies which start it on varied errands, whether within, mental, or from the outside, sensory, will I fear—as a poet, half a doctor, said of a far different matter—“tease the soul with thought” for many a day. I repeat that this ultimate question of true nature of the stimulating energy in animal life radically concerns us and our work.

Maxwell believes with Hoff and Arrhenius that the effect of heat on reactive velocity affords a trustworthy means of discrimination between chemical processes and those accepted as physical. A rise of ten degrees of temperature increases the velocity of a chemical reaction two or three times, while no known physical process is to any like degree thus accelerated. In a paper of great ability, strengthened by Loeb's observations on artificial maturation of the eggs of *Lottia*, Maxwell concludes that the temperature coefficient of the speed of the nerve impulse<sup>5</sup> indicates definitely that the conduction is a chemical process. If it should finally appear that the activities of the nerves are due to the mysterious propagation of inconceivably swift chemical processes, it will at once offer us a field for explanatory research in regard to the baffling problems of a wide range of neuritic maladies. The trend of opinion runs just now toward chemical theories, and it is worth while, as we mentally sum up the objective argument, to see what here a great observer, Jacques Loeb, permits me to quote from a letter, in which he dwells, with the cautious reserve of the trained scientific mind, upon the form this large problem is now taking. Repeating in his letter the conclusions of Maxwell, he writes:

“The gaps in our knowledge are of such a character as not

<sup>5</sup> Using the giant slug (*ariolimax columbianus*), (440 mm.) one and four-tenth feet a second.

to allow us to go beyond this statement, viz., the temperature coefficient of the nerve impulse indicates that chemical reactions are involved in the propagation of impulse. In which way they are involved we cannot exactly state at present; we only know that the salts, especially the ratio between the concentration of the sodium ions and the concentration of the calcium ions in the nerve, play an important rôle in this sense, that within certain limits an increase in this ratio causes an increase in irritability of the nerve, and a decrease has the reverse effect. It also seems pretty certain that oxidations are a necessary pre-requisite for the life of the nerve, and possibly also for the propagation of the nerve impulse. Rather," he adds, "than make hypotheses at this stage, I feel, with Professor Ernst Mach, that scientists must learn to endure an incomplete world-view. Our hypotheses mainly serve as an attempt at escaping an enforced condition of intellectual slavery."

Considering the tentative views held by Loeb and others and the present laboratory indecisions, you will see how far we are from the practical helpfulness which as neurologists we should anticipate if the nerve impulse could be proved to depend on minute and essential saline interchanges. I am personally of opinion that this research should recommence with fresh studies of that form of excito-contractile impulses which is found in plants and is probably identical with that observed in animals. The resemblance is so striking as to have over and over caused the assertion of identity of the phenomena of transmission to be made by botanists. If they are right, it must, I think, follow that whatever explains transfer of excitatory energy in the one kingdom must equally explain it in the other. But while this question in animal life has been variously approached, in the vegetable kingdom the possibility of chemical explanation has been as yet very little considered.

As I, who am not a botanist, am talking to men probably unfamiliar with vegetable physiology, I may be pardoned if, with brevity, I try to arouse in you concerning these two correlated physiologies the interest they have awakened in me.

For perhaps individual reasons many men have some curious sense of mysterious relation to the outer world of trees and flowers; but he who has watched the mimosa, in its most sensitive condition, make its quick responses, or as if its mood had

changed, its moveless state of temporary unresponse, must be dull indeed if for a time the logic of the imagination does not startle him with some strange sense of kinship. I can well imagine a neurotic crusade against cruelty to plants after watching experiments on *mimosa*. The hysteric protests of the vivisectionists of truth against our noblest work have almost reached this limit of folly.

There is stored in plants potential energy which for functional use passes through protoplasmic threads on which variously responsive cells are strung. The analogue of the irritito-contractile muscle of animal life is in the plant cell walls, which contracting expel fluid and thus cause in the leaves mechanical changes of position. This most interesting process may be determined by many plants by a mere rude pinch of a sub-leaflet. The form of voyaging energy, causing cell wall shrinkage and exosmosis of intra-cellular sap, may be chemic or physical. It is far more open to observation than is its animal analogue, neural energy, and whether here too, in the animal, as the muscle shortens there be any hydraulic interchange is perhaps worth a thought.<sup>6, 7</sup>

In certain of the lower forms of vegetable life, like the *Myxomycetes*, the excitatory impulse at a touch moves diffusely, as in *amoeba*. In *drosera*, the well known fly-trap of our marshes,

<sup>6</sup> According to all that we know as to the condition of turgescence cells, from DeVries' researches on plasmolysis, Pfeffer's descriptions, and my own considerations and experiments, it can scarcely be doubted that the cellulose walls themselves are always in a high degree permeable to water, and that the condition of turgescence of the cells depends upon the protoplasmic utricle opposing the expulsion of the endosmotically absorbed water even under high pressure. A sudden escape of water from turgescence cells can thus be rendered possible only by this property of the protoplasmic utricle undergoing some change, or, in other words, by the hitherto non-permeable protoplasm becoming permeable in consequence of the stimulus, and thus letting water escape. We see thence that in the case of the irritable organs of plants two essentially distinct points come into consideration; on the one hand the action of the stimulus on the protoplasm, and on the other, the extensibility and elasticity of the cellulose wall.—Sach's "Physiology of Plants," Translation, pp. 653-654.

<sup>7</sup> The visible effect (that we can exactly and appropriately call stimulation effect, in *mimosa* species—three or four at least—in *cassia*, etc., amongst *leguminosæ*, of *oxalis* species in *oxalidaceæ*, and of *droseras* and *dioneas*) of application of any form of contact energy to above plants, when the stimulus reaches an irritito-contractile center, is, we believe, (1) that stimulant energy causes molecular change in the protoplasm so as to render it porous or readily permeable to water; (2) that almost simultaneously the complex aggregation substance of each cell becomes decomposed, and in the process gives off water from its substance; (3) that some of this water escapes through the protoplasmic pores or gateways into intercellular spaces, so as to cause flaccidity in the cells and resulting motion of leaf or leaflet.—John M. Macfarlane.

this is true of any part of the half-leaf, but there are also distinct paths of distributive energy through the sensitive, hair-like threads. In *mimosa*<sup>8</sup> this transmissive energy may be started above in the leaf and move down, or started below and move up. It may be sent on its way by a touch of ice or a hot needle or electricity applied to the stem or to the cushion (pulvinus) at the junction of leaf and stem. Even the stipules of each leaf have power to respond. Following up a suggestion made by me, Professor Macfarlane has shown within a month that if the small roots of *mimosa* be cut across, in twenty-five to fifty seconds the topmost leaflets in a plant some eighteen inches (0.45 m.) high begin to fold together.<sup>9</sup>

In the plant, as in the lower animal, the rate of transmission is slow, as seen in the lowest plants capable of visible response. In the *mimosa* the transmission is very tardy from root to leaf, but in the primary sub-leaflet it is not less than one inch (25 mm.) per second, and in some cases equals in speed the normal nerve rate in man. Recovery after making response to stimulation is, compared to that of muscles, slow, even when the envioning aids are most favorable, and necessarily so because of the peculiar endosmotic mechanisms and the time requisite for refilling the cells concerned in the production of movement.

I leave untouched the assertion that plants—all plants, says Bose—have what he calls nerves; this is much questioned and must be relegated to the decisions of the laboratory.

Let me say in conclusion to this part of my theme that the negative galvano-electric variation accompanies the motor response to stimuli in *drosera* and *dionæa* as it does in the animal. Excitatory stimulation then is a phenomenon found in both kingdoms, and, as it seems to me, is less likely to find an explanation in physical than in chemical activities.

The one dissemblance is the absence of reflex movements in plants and any proof as yet of receptive centers whence excitatory energy is sent out on definite tracks. With this exception it thus seems that all the forms of response to excitation are to be found in a rising scale of perfection in plant and animal, and are

<sup>8</sup> In *mimosa* there are distinct tracks which lie between the outer bark and the ligneous center. This space is full of closely packed crystals, which extend from the roots upward, and are believed to have some distinct function in the transmission.—John M. Macfarlane.

<sup>9</sup> This curious fact, that only the upper leaves responded to injury of a root, suggests a further research, such as is now being made in the botanical laboratory of the University of Pennsylvania.

modified and governed by the increasing rise in complexity of structure, by favoring environment, and by generations of habit uses.

I have dealt inadequately with a question too large for the time of an address. I trust that I may have left with you some thought-stirring sense of the resemblance of the excitatory activities in the double dominion of organic life. I should like you to share the feeling my imperfect summary of a really large study has left with me, that we are on the way to a fuller comparative consideration of the forms of energy which are seen in plant, animal and the outer physical world.

Again I venture to digress and shall ask your careful reattention to a less considered subject with which our diagnosis is daily concerned. I wish to set before you some neglected facts and questions concerning the class of symptom signals we create and call reflexes. The line of thought will take us along paths which are most attractive.

In 1875 Westphal and Erb taught the value of the knee jerk muscle response. In 1883 Jendrassik discovered that it was possible to increase it by strong hand closure. He made no attempt to explain this fact, and here, with no further comment or addition, he left the subject. In 1886 Dr. Morris Lewis and I explored this fertile field and, using for the first time the term "reinforcements," made a long study of these phenomena with many interesting resultant discoveries. This research suggested and thus brought about the careful laboratory studies of reflexes and reinforcements and accurate determination of their times by Bowditch. His admirable work was followed by the laboratory research of Howells on mentation and emotion as reinforcements. A notable series of papers followed, by Lombard, Noyes, Heins, Taylor, Reichert, and Eshner, all American contributions. It is to this subject I desire to return. Of course, if I had not some novel views to present and some fruitful thoughts to offer I should not venture to bring before you what must be more or less familiar.

For us a reflex act should mean a definite, involuntary motor response to a definite excitation. There are but two forms—one, where an abruptly stretched muscle gives an answer by contracting; the second, where there is a muscular reply to an excitation of the skin. The first, which the books call a deep reflex, we ventured to speak of as muscle-muscle reflex, or for brevity, m.

m. r. The second we named the skin-muscle reflex, or briefly, s. m. r. I commend these labels to your use as convenient and descriptive.

The muscle to muscle reflex, best represented by the well known knee jerk, is, as you know, increased by reinforcing agencies. It is with these I would first deal, since the subject needs to be recalled to the attention of both clinic and laboratory.

Certain of the extensor muscles exhibit reflex motion on abrupt stretching. These reflexes are made larger, as we see daily in the knee jerk response, by strong hand movements. But, as we showed, much more feeble voluntary movements reinforce. To wink, laugh, swallow, speak, or to bend a finger, can be proved to reinforce these reflex responses. More than this, as we were first to discover, nearly every distinct sensation increases them. Sudden light or sound, remotely applied heat, abrupt cold, a pinch, the pull on a single hair, add to the response.

Emotion is the most efficient and lasting reinforcement. Next in power is a quick freeze of the skin. Motor reinforcement is the least effective. We may use for large influence combinations of violent hand closure with skin freezing, or a sharp pinch, and thus variously increase the resultant reflex reply. These reinforcements are not merely refined laboratory records but are the crude observations of the clinic and plain to be seen.

We may reasonably infer that all voluntary motion and all sensation, mentation and emotion have the same effects, even when too slight to be registered visibly as reinforcements. If we strike at one time two or even three tendons and close one hand or wink forcibly, all three muscles respond to the one reinforcement. The phenomenon then is a general one. The afflux of energy giving increase of a reflex appears to be due to a liberation of energy far in excess of the functional needs of the active organ. This excess we called overflow. It appears to be always sufficient to pass from the centers and, traversing numberless nerve paths, so to affect certain lower ganglionic motor centers as to add to their power of response to a coincident external stimulation.

This overflow appears to be always of cerebral origin; and whether, in inflammatory affections of spinal ganglia above the level of the one concerned in the reflex, they too may thus reinforce the lower center, I do not know, but I have suspected this to be in some cases probable. This is certain, that after section

of the cervical spine in dogs, a knee reflex can be had after a time, but is not reinforcible as in health by irritation of the nerves of the opposite leg.<sup>10</sup> The cerebrum is needed.

To illustrate further. A flash of brilliant lightning illumines a landscape and affects the retina. The nerve energy thus set in motion, passing from station to station, causes reflectively winking and pupillary contraction. Each ganglionic center through which it moves sends forth an overflow of energy until at last there is, so to speak, a memorial impression of the thing seen left in the cuneus and a final overflow from this ganglionic center. If the primary sensory influence has been abrupt and very powerful, a general muscular movement tells us how enormous must be this distribution of energy. A less violent retinal stimulus, passing by many channels, is remotely detectible only as it reinforces an artificially evoked reflex, such as the knee jerk.

A sensation to reinforce must first reach the cerebrum, and thence by overflow affect a coincident reflex. It follows thus a longer track than the motor reinforcement, and the two modes of reinforcement must of course have different lengths of time. Several explanations of reinforcements occurred to us. That of overflow is the one we accepted. It has been strangely neglected, and yet what can be more interesting under any explanation than the conception of these large or small waves of liberated energy continually flowing through the body until lost by translation into forms of kinetic or other energy. So capable of proof, so demonstrable, this overflow, usually unfelt and unseen, must yet be constant; and surely scarce more amazing is the circulation of the blood. This flushing of the body with energy may have influential values in health and effects in disease as yet unknown to us and unsuspected. If the mere statement of it does not leave with you the bewildering conception of multitudes of nerve currents momentarily set free for remote transmission on unknown errands, I shall feel that I have inadequately presented a neglected and very positive phenomenon.

My best excuse for dwelling on this subject is that little or nothing is said of it in text-books. It seems to me to be a discovery of the utmost importance in physiology and to have some explanatory value for neurology.

If you see no fault in our conclusions you may feel interest in some of the further thought suggested by this seemingly

<sup>10</sup> Reichert.

wasteful expenditure of effluent energy. How far the overflow goes we do not know, nor whether its direct effect ceases in the lower ganglia or passes on by the nerve channels of nutritive influences into the muscles and has something to do with preserving their tone. A fact to be stated presently makes this not unlikely.

Is it not conceivable that there are acquired conditions of the body, neurasthenic and hysteric, in which these endless normal overflows may be mischievously felt and may account for suddenly visible symptoms of nervous excitement?

To will movement of the lost hand after an amputation at the shoulder is a good reinforcement and is accompanied usually by a disagreeable feeling referred to the absent member. The sensory representation of a willed movement is normal. We may therefore suspect that what we call motor reinforcements may be after all in a measure due to coördinate excitation of centers appreciative of grouped movements. Indeed to will motion of the external ear muscle gave good reinforcements with persons who could not stir them by any such effort. A step further brings us to the possibility that some distinct acts of mentation give rise to reinforcing overflows of nerve force; all mental activities may add to the enormous number of ever moving currents of released energy.

When we recall to mind the form of words, verse or other, we may at will set in action the centers which render it audibly, or, as we put it, we may say it to ourselves without open speech. If a thin inflated rubber ball be put under the tongue and connected with a tambour and long recording pen and rotating cylinder, there is only a line record while the mind is at rest; but if we dumbly but strongly memorize some definite bit of prose or verse, the needle at once records in large tremors on the rotating cylinder the fact that unfelt movements of the muscles are affecting the rubber ball beneath the tongue. It is, therefore, I think, also probable that when we will any muscular action, or rather think of it without setting the muscle into visible motion, this would be the equivalent of unspoken speech, and there may be detected in the muscle concerned tremors capable of like means of record. This awaits and invites laboratory research. If the inference I make be justified by the laboratories we shall have an added proof of the constant diffusion of energy, now to be demonstrated only through the evidence afforded by the reinforcements



of reflexes. These illustrations of remotely active neural influences have some relation to the matter of reinforcement overflow, on which I fear I may have dwelt too long.

There are abrupt occurrences which we know as the complex symptom "shock," when the passing out of a gall stone or the sudden crush of a joint by a bullet gives rise to paretic feebleness, sweat, and lowered arterial tension. The shock of profound emotion may present similar symptoms. A vast overflow of released energy from violently assaulted sensory centers seems to me to account reasonably for what happens in these cases.

This hypothetical explanation is suggested by Bowditch's discovery of the temporary loss or enfeeblement of the knee reflex which follows even moderate reinforcements. The reinforced center is for a time more or less exhausted—a fact also proved by us from the failure of response upon over-use of reinforcements.

I turn for a moment to the reflexes which we ourselves labeled skin-muscle reflexes, and, for brevity, s. m. r., such as the sole reflex.

A recent able book on neurology says the deep and superficial reflexes differ in no way anatomically or physiologically. There is one difference which is never noticed and which I cannot explain and about which, because of intrinsic difficulties in the study, we may have been mistaken.

No form of motor or sensory activities reinforces the response to irritation of the skin-muscle reflexes, such as the sole, for example, or the more marked cremaster reflex. The cremaster is the one reflex unrepresented in women, but whether it may be invisibly represented by responsive movement on the part of the muscular tissues of the ovarian ligaments may be suspected.

Some of the practical applications of attention to reflex reinforcements may be worthy of statement. In a case which I saw with Dr. Osler, we felt sure that a fracture of the dorsal spine had isolated the brain from the lower cord. The summation of stimulus by repeated blows on the knee tendon at last brought out a slight response. Then and not before, violent hand motion, with grimace of the face, enabled us to get a full evocation of the knee jerk. This was a distinct signal of there being still open a neural pathway from the brain. It may be therefore that strong exercise of the upper limbs will remedially

aid to keep in condition lower centers when these are partially insulated by disease.

What are the tracts by which motor and sensory reinforcements reach the spinal centers we do not know. In some cases of absent or lessened knee jerk from disease or violence to the cord when the motor reinforcement has failed to act sensory reinforcement has won a reflex answer, or a combination of the two has succeeded. It is a question not without clinical interest.

Dr. Morris Lewis and I discovered that, when responsive to a blow on its belly, a muscle obeys all the laws which govern reinforcements of a muscle stretched by a sharp jerk from its tendon.<sup>11</sup> This whole range of reinforcements has failed to attract clinical interest. Why the flexors in general do not afford reflex replies is still to be learned. The failure seems to be due to a normal lack of excitability somewhere in the reflex arcs and is, after all, a matter of degree, for in spastic disorders the m. m. reflexes can be had in the flexors and are then, I think, reinforcing; but of this I am not sure.

There remain the unexplained cases of entire absence of reflex muscle-muscle response and reinforcements in some healthy people, in whom, I may add, there is perfect preservation of skin-muscle reflex—a further contribution to the list of puzzling differences between the two sets of reflex signals.

Another fact for a time seemed inexplicable. If we move by painless faradic currents the belly of the extensors of the hand no form of reinforcement increases this muscular response. The reason is plain. The stimulus is local and the electrically caused motion owes nothing to ganglionic excitation and, hence, is never reinforcing by additions to ganglionic energy—another and beautiful proof, if any be needed, of the fact that m. m. reaction is a true reflex and does not depend alone on the mere tonal health of muscle.

There may be other and more common applications of this law of ever constant overflow of released energy. We habitually regard the increase of heart action from exercise as due to the excess of blood flow caused by the pumping action of muscles. I think another element may be reinforcement by overflow of the cardiac ganglia.

<sup>11</sup> The muscle, owing to intrinsic excitability, contracts on being struck, even when its motor nerve has been cut. If the reflex arc is entire the blow evokes also a reflex reply. There are thus two contributory responses in health.

The mere act of closing one hand can scarce affect materially the blood flow, but try it with an ear over the heart and you will hear how notably it accentuates the heart sounds, as one of my assistants, Dr. John K. Mitchell, long ago pointed out.<sup>12</sup>

All these facts deeply concern us and are not merely ingenuities and puzzles. Many other phenomena of disease may be reasonably explained by this conception of the far-reaching influence of overflows of energy. Grave central nerve lesions appear in some cases to render over excitable neighboring or related centers not directly implicated. Then the ordinary constancy of normal restraining inhibitions fails, and effort to use the injured center results in the excess of effluent energy so disturbing these remote ganglia as to give rise to ungovernable movements of healthy parts, such as we see in the motion of the sound hand in response to vain effort to move the palsied hand. There are other like phenomena with which you are all familiar. With one more illustration I leave this subject.

When, in a case of violent facial neuralgia, to talk, to laugh, to chew evokes maddening pain, are we not in the presence of an example of reinforcement from overflow of related motor centers affecting a sensory ganglion excitably ready to call forth the phenomenon of pain? The phenomenon of overflow from sensation centres upon centres exquisitely sensitized by the torture of causalgia from nerve wounds I described long ago. Every positive sensation, sound, vibration, music, as of a band, added to the sum of torture. I wrote of this in language perhaps too imaginative that this terrible hyperesthesia was like a state of sensory tetanus.<sup>13</sup>

You may differ with me as to some of my conclusions—I may differ with myself soon or late—but I trust that in this too long claim upon your attention I have not left you without thoughts of interest. Much that would have lengthened my address I have relegated to notes.

I thank you for the kindness which has made me your president and for the patience and attention with which you have listened to much that may have been familiar, but which I have vainly tried to put in briefer form.

<sup>12</sup> This fact and others open the question of the reinforcement of all normal movements, voluntary and involuntary, by reinforcements due to other and remote volitional acts. It was one in which we failed to obtain competent answers. The gymnasiums should be able to settle at least a part of this complex problem.

<sup>13</sup> Injuries to Nerves, page 181.

FLACCID PARALYSIS OR EXTREME HYPOTONIA OF  
THE MUSCLES WHICH POISE THE HEAD, AND  
OTHER SYMPTOMS INDICATIVE OF A CEREBEL-  
LAR TUMOR.

BY CHARLES K. MILLS, M.D.

*(From the Department of Neurology of the University of Pennsylvania.)*

Although a necropsy was not obtained in the following case, in spite of earnest efforts to this end, and therefore the nature and the position of the lesion were not determined, the symptoms presented were in one or two respects so unusual that it has seemed worth while to put the case on record.

The history of the case and the focal symptoms pointed to a cerebellar lesion; the general symptoms—headache, nausea or vomiting, vertigo, and papilledema—to an intracranial tumor. The symptoms which were of course most indicative of cerebellar tumor were the vertiginous seizures which were accompanied by vomiting, the ataxia, and the tonelessness or paresis of the muscles of the neck, back and trunk.

The inability to support and poise the head was a striking symptom, and was not one which came on in the last stages of the disease. The mother reported that she had first observed the tendency of the head to fall to one side or forward several months before the death of the patient. The inability to hold the head erect was almost absolute, amounting to an extreme hypotonia or flaccid paralysis. I have never seen a case in which this loss of power was so marked.

*Child eight years old with general symptoms of brain tumor—seizures with vertigo, vomiting and falling—development of tendency to gradual drooping forward of the head—dizziness caused by efforts to hold up the head—weakness of right leg and arm—examination showed inability to support and poise the head—trunk movements generally weak or unskilful—recurring spasticity in the right lower extremity—deep and superficial reflexes exaggerated, especially on the right.*

The patient, M. M., eight years old, was admitted to the Philadelphia General Hospital, November 4, 1908. The mother of the patient had two other children older than the patient and three younger; she lost two children with bronchitis. The father was a miner and in good health. The mother had always been in good health. According to the statements of the mother, the child was well until one year before admission. She was active physically and mentally, had been going to school, and had no ailment of any sort. She had had measles a year or two before this time, but had no other illness with the exception of occasional colds. She had a fall from a chair when she was a child, but was not rendered unconscious by the fall nor had any trouble afterwards.

One year before admission the patient went to school as well as ever and at two o'clock in the afternoon was brought home by two girls who said that she had fainted in school. It was afterwards learned that the child had vomited and fallen on the floor in a faint in the school room. When asked as to whether or not she was unconscious the mother said that she seemed to know that she had fallen from her chair, but could not get up without assistance. When she reached home she was pale and very cold. She lay down and slept after reaching her home, and at the end of two hours got up apparently as well as ever. Two weeks after this she had another attack similar to the first. This one occurred at home. The patient first reeled around and around and then fell to the floor in a faint. She had had four of these serious spells since the first one. Besides these attacks the patient had another form of seizure in which she became sick at her stomach, vomited and complained of dizziness and sometimes, although not always of headache.

About six months before the admission of the child to the hospital her mother noticed for the first time that she held her head in a curious way, usually drooping it towards her chest. At first she thought that she tended to carry her head to the right side. She gradually got so that she could not hold her head up when sitting or standing, saying if she attempted to do so she became very dizzy.

Three months before admission to the hospital the patient began to drag her right foot a little and also to use her right arm not so well as she used the left. She also at this time, began

to take on a wabbling station and walk. She did not seem to be able to control her legs fully, the right being weaker than the left.

On her admission the child complained of pain in both the frontal and occipital regions, and suffered from dizziness. She lay upon the right side, the lower extremity drawn upward, and the right hand pressing upon the forehead. She had the eyes partly closed, with occasional movements upward of the lids and eyeballs. Her speech was slow and she was stuporous and apparently sleepy. She was aroused with difficulty. When asked as to the duration of her illness she gave uncertain answers, but complained of pain in her head, vomiting and dizziness. She yawned frequently. She lay in rather apathetic state, occasionally moaning. Efforts to rouse her were not entirely successful, but to a certain extent she recognized her surroundings, but she did not do what she was told. At times she would try to do what she was told, and then would say distinctly, "I can't do it."

Physical examination as to heart, lungs and abdomen was negative with the exception that at times she had an intermittent pulse. Her bowels and bladder were occasionally incontinent.

The patient was apparently unable to sit alone for any length of time or to stand by herself. In making the effort it seemed that the trunk muscles would not act properly in the sitting position and in standing the head would be held for a moment in the line of the trunk and then droop to one or the other side, and losing the center of gravity the child would topple and fall over. This inability to support the head was evident whether she stood or sat; the head would fall in any direction, but never with any constancy in any one direction. The head could not be held in an erect position, but without support would fall backward, forward or sideways. During the examination the neck muscles were not spastic; they were paretic, flaccid or toneless. She did not seem to use them. Resting on the pillow she was able only in a feeble manner to rotate her head from one side to the other.

The child had great difficulty in chewing and swallowing. In fact the muscles for mastication were used only to a slight extent. The lower jaw hung downward, and there seemed to be some weakness of both sides of the lower half of the face. The patient could wrinkle the brows and close the eyes tightly.

The tongue was protruded in the median line with very slight tremor.

The upper extremities showed, in common, a peculiar flail-like condition with motion only as the result of what appeared to be extreme effort. The right upper extremity, however, at times seemed to be slightly spastic. The reflexes were slightly increased, more on the right than on the left. There was, apparently, no atrophy in either of the upper extremities.

During the examination of the lower extremities the patient moved the legs under the bed clothing, but endeavor to bring out resistance in them was without result. The right leg, at times, seemed to show some temporary spasticity. The deep reflexes were all increased. Foot clonus on the right side was marked and persistent; on the left it was present, but rapidly exhausted. Holding the feet at the instep and stimulating the plantar surface on the right, a typical Babinski was obtained; on the left, under the same conditions, hyperextension of the great toe was obtained, and also the tarsal movement. The von Bechterew tarsal reflex was not obtained.

Examination for sensation was very unsatisfactory. The patient seemed to respond to all forms of stimulation, these responses being decided by the frown on the child's face when the irritation was offered.

Testing the patient for general vision, she recognized a watch and a twenty-five cent piece, but she seemed slow in apprehending what was asked of her or what she was told to do. The pupils were about equal, of moderate size, each reacted promptly to light and in accommodation. The eyelids were not completely approximated when the child was resting or was sleeping.

The eye examination showed, in the right eye, a small corneal scar at the inner edge. The disc in this eye was swollen, the temporal edge being visible. The surface of the disc was plus three diopters. The arteries were about normal in size; the veins were enormously swollen; particularly the upper and lower temporal veins were very tortuous. Near the disc at the inner side was a linear hemorrhage. The left eye showed a slightly hazy cornea. The disc was swollen, and the surface of the disc was plus two and one half diopters. The arteries were normal, but the veins were enormously swollen as on the right side. Both discs showed marked pallor in the deep layers, indicating

the beginning of atrophy. It was impossible to take either the vision or the fields. There was no strabismus, but rotation of the eye was not possible.

After the examination the patient was weak and exhausted. On November 8, 1908, four days after admission to the hospital, the child became cyanosed, pulse almost imperceptible, and death followed. No necropsy could be obtained in this case.

It is well known that in lesions of the cerebellum, especially tumor, the head sometimes tends to one side, according to most of those who have observed the phenomenon, away from the side of the lesion. Owing to the flaccidity or tonelessness of the muscles of the trunk and neck, the head and body may assume all sorts of abnormal positions in the effort of the patient to maintain balance. As stated at the beginning of this report, however, I have never seen a case in which the inability to maintain the head in a fixed position was so marked as in the one here reported. The loss of control over the muscles of the trunk was also more marked than in almost any case which has come under my observation.



# THE DIFFERENTIAL DIAGNOSIS OF GRAVE HYS- TERIA AND ORGANIC DISEASE OF THE BRAIN AND SPINAL CORD, ESPECIALLY DISEASE OF THE PARIETAL LOBE<sup>1</sup>

BY CHARLES K. MILLS, M.D.

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*(From the Department of Neurology of the University of Pennsylvania.)*

Several reasons seem to make it desirable to present this case to the society for investigation and opinion. Owing to the peculiar mental state of the patient and the manner in which his symptoms improved after admission, the question of diagnosis as between an organic and a grave hysterical affection is worthy of some consideration. The clinical phenomena in this case, at least most of them, are, I believe, to be regarded as of organic origin, in spite of the great improvement which has taken place in a period of a few weeks.

Much interest has been centered upon the diagnostic value of two of the symptoms presented by this patient, namely the foot clonus and the Babinski sign. My own opinion, long since expressed at a meeting of this society and before the meeting referred to<sup>2</sup> is that persistent foot clonus is almost invariably a sign of organic disease. It usually means destruction or interruption of the cortico-spinal fibers, although disease of the motor cortex may also give this manifestation. Now and then a case is seen which would seem to throw doubt upon this position, but always, I believe, careful investigation will show that it is tenable, in other words that the cases in which foot clonus is present, and which are supposed to be hysterical, have some organic basis. Of course it is well known that an abortive or spurious form of foot clonus may be seen in grave hysteria, and even in severe neurasthenia, but this is very different from the persistent trepidation which is observed in organic cases, and

<sup>1</sup>Read at the meeting of the Philadelphia Neurological Society, held December 18, 1908.

<sup>2</sup>Proceedings of the Philadelphia Neurological Society, JOURNAL OF NERVOUS AND MENTAL DISEASE, July, 1897, Vol. XXIV, No. 7.

which is quite marked in the patient exhibited to the society.

The Babinski sign when typical is also, as Babinski himself avers, always an indication of organic disease, and especially of disease of the pyramidal tracts. This view I continue to hold, notwithstanding the recent paper of Van Gehuchten<sup>3</sup> who has been converted to the opinion that in rare cases the Babinski sign may be present in hysteria, this contention being founded upon the report of a case studied by him in which both foot clonus and the Babinski sign were present and both disappeared in a few days after their demonstration. One case, however well studied and however striking, is not sufficient to contravene the testimony of scores of other well-studied cases. Both foot clonus and the Babinski sign are present in the patient here presented. The Babinski sign is indeed manifest on both sides, although more demonstrable on the left. The inference from a study of these phenomena is therefore in favor of organic disease.

Hypesthesia is of course frequently present in functional disease, but it is equally true that it is sometimes the sign of an organic affection and especially of disease of the parietal lobe.

Whatever may have been the experience of others, I have yet to see a case of true astereognosis of hysterical origin, and I am always doubtful as to the functional nature of cases in which loss of the sense of position and ataxia of the upper extremity of the type presented by this patient are present. A pseudo-ataxia, like a pseudo-foot-clonus, and a pseudo-Babinski sign, are all seen in hysteria but can be readily differentiated from the corresponding symptoms with an organic basis.

It is worthy of consideration in discussing the question of hysteria, to remember that the hysterical imitations of organic disease are usually those which are concerned with what might be called elemental nervous phenomena, such phenomena as impairment of cutaneous sensibility, of motility, and lowering of the functions of the special senses. Stereognosis is a more highly evolved cerebral function than cutaneous sensibility, and its loss, like true word deafness and word blindness or letter blindness, never occurs in pure hysteria. This is an interesting fact, and one which sheds some light upon the nature of hysterical phenomena, but this phase of the subject I shall take up later in a paper to be read before one of our national associations.

<sup>3</sup> Van Gehuchten, A., *Le Nevraxe*, Recueil de neurologie normale et pathologique, Vol. VIII, Louvain, 1906.

I might say in passing that I have never seen typical hemianopsia in a case of grave hysteria, although I have of course seen many instances of peculiar alterations and contractions in the visual field. Here again the explanation is to be found in a consideration of the real nature of hysterical phenomena. Complete loss of one half of the visual field produced by organic lesion of the optic radiations or by lesions in other positions is a very different phenomenon from the visual fields often presented by hysterical patients.

The diagnosis in the present case is somewhat doubtful, but the probabilities are that it is one of cerebro-spinal syphilis, possibly general paresis in an early stage. It is of course a fact too well known to be commented upon here, that both in cerebral syphilis and in general paresis the patients are the subjects of apoplectiform attacks, such as this man suffered from and such as he clearly describes. It will be seen from a study of his symptoms that he has some evidence of disease in both lower extremities, where the reflexes are exaggerated and where the gait tends to assume a spastic form, although his most pronounced symptoms are unilateral and left-sided. The case may be one in which, in association with some spinal disorder like a not much advanced meningomyelitis, more pronounced cerebral lesions are present in the parietal and frontal lobes.

This case is particularly instructive if the views advanced in its presentation are correct, in the differentiation of hysteria from lesions of the parietal lobe. He has the typical parietal lobe symptom complex, plus other manifestations. These parietal symptoms are the hypesthesia, impairment of the muscular sense, the ataxia, and the astereognosis. As I have tried to indicate, some at least of these symptoms are never present in hysteria, however grave. The foot clonus and Babinski sign are to be explained not by disease of the parietal lobe but by involvement, either in the cord or in the brain, of the corticospinal systems of fibers.

J. D., male, forty-seven years old, was admitted to the Philadelphia General Hospital, November 22, 1908. He showed at the time of his admission much impairment of power in the use of his left arm and leg, and a psychic state, which in general terms might be described as one of mild optimism or exaltation.

His mother died of consumption; otherwise his family history was negative.

The patient was married twenty years before the date of admission. His wife had no children, but had one miscarriage. He had used tobacco to excess, used tea and coffee moderately, but did not use alcohol. He had a chancre when nineteen or twenty years old, but never had a rash. He took specific treatment for two years.

During the year previous to his admission he stated that he had been treated for nervous prostration which was brought on by care and worry. He said that his most important symptoms had been in his lower extremities, his right leg making what he called a "sloppy movement." He was well enough to be able to be up and around until two days prior to his admission to the hospital.

At about eight o'clock in the evening of this day his right eye began to smart, and he felt a numb or tingling sensation creeping from the right side of his forehead to the left. Headache was present to a slight degree and he felt as though he were going around. He then walked up one flight of stairs, lit the gas in his room, sat on the bed and suddenly became utterly helpless. The left side of his body would not work at all. He could not stand or walk, so he was put to bed and medical aid was summoned. The left leg and arm lost "their intelligence" as the patient expressed it, while the attending physician told him that he had a stroke and that the left leg and arm were somewhat paralyzed.

Consciousness was never lost, although the patient said that he might have been dazed for a few moments. He said that his speech was affected in that he was not able to talk as fast as he had formerly, while both his vision and hearing were diminished. The left half of his tongue felt thick and clumsy.

On admission to the hospital the patient complained of no headache or pain, but had vertigo when he rose to a sitting position, which he was unable to do without aid. His mind was in a peculiar state; there was a certain sense of well-being present, and at times he appeared to be what one would call "fresh" or flippant.

He was a fairly well developed and well nourished man.

Examination showed that the conjunctivæ were normal: the pupils were slightly dilated, but equal, regular and responded both to light and in accommodation; extraocular movements were normal and no nystagmus was present. The face was slightly congested. The masseters contracted equally on both sides. The mouth was opened in a straight line. He wrinkled the forehead and closed the eyelids well on both sides. He showed his teeth and drew up the angles of his mouth fairly well on both sides, but the movement on the left was slower and not so well performed as that on the right side. The tongue

was clean and moist; it was protruded in the median line and was freely movable. No tremors of the lips or tongue were noticed. Swallowing and mastication were normally performed. His speech was not apparently affected.

The pulse was about normal in rate, regular, of fair volume and tension; the vessels showed some sclerosis. The chest was well formed; expansion was good, but somewhat greater on the right than on the left side. The heart and lungs were normal. The abdomen showed no abnormality. The musculature of the upper extremities was good; no spasticity was present on either side.

All movements of the upper extremities could be performed on both sides, but on the left they were somewhat slower and lacked certainty as compared with the right. The left side was slightly weaker than the right as demonstrated by movements against resistance, while the grip was also somewhat weaker on the left, although fairly strong on both sides.

Marked ataxia was present on the left side as was demonstrated by the finger-to-nose test and even better by the finger-to-finger test. The right side was not ataxic. No tremors were noticeable on either side.

In the lower extremities the musculature was good. Very slight spasticity was exhibited in both limbs. All movements could be performed on both sides, but the left side was somewhat weaker than the right. The left side showed some ataxia, but none was evident on the right. The station and gait were not tested at first.

The patient had normal control of both the bladder and rectum.

Studying the cutaneous and deep reflexes resulted as follows: The conjunctivæ and palatal reflexes were present on both sides; the abdominal, cremasteric and plantar reflexes were normal; the biceps, triceps and patellar tendon reflexes were increased on both sides; patellar clonus was present on the left side; the Achilles tendon reflex was increased on both sides; persistent foot clonus and the Babinski sign were present on both sides. Hyperextension of the great toe could also be developed by the methods of Oppenheim and Gordon.

Examining the patient for sensation, it was found that tactile sensation was diminished very moderately on the left side of the body, principally in the extremities. This was also diminished on the left side of the face below the level of the eyes, while the trunk and abdomen were little, if any, involved. In the extremities this diminution became more marked as the hand and foot were approached. Pain and temperature senses were diminished over the same area as was tactile sense. The diminution of the temperature sense was not so marked as that of the other senses. The patient could not tell difference in pressure as well on the left as on the right side of the body. His sense of

locality was fairly good on both sides. The sense of position was diminished on the left side. The patient could not, with his eyes closed, exactly place the right limb in the same position in which the left limb had been placed. He was unable to tell accurately the position in which his left leg or arm was.

Stereognosis was normal on the right; on the left side astereognosis was present.

The patient's central vision was somewhat diminished in both eyes; peripheral or field vision was about normal for both eyes.

An ophthalmic examination was made by Dr. G. E. deSchweinitz on December 2, 1908, who reported as follows: Physiological cupping was marked in the left eye; the eye grounds were normal.

Hearing was diminished on both sides, more on the left than on the right. The tick of a watch could not be heard when placed in front of the patient's ears or upon the mastoid processes.

Olfaction was normal. Taste was normal on both sides of the tongue.

The man's memory was good for both past and recent events. Intelligence was good. He had no delusions or hallucinations.

The following notes were made on December 6, 1908, fourteen days after his admission to the hospital.

The patient was still in bed, but was able to rise to a sitting posture with little or no discomfort. The strength on the two sides of the body was nearly or quite equal. The left angle of the mouth was drawn up as well as the right.

The ataxia had diminished somewhat on the left side of the body but was still easily apparent. Tactile, pain, temperature and pressure sensations had improved on the left side, but were not normal. The sense of position had also somewhat improved on the left side. Astereognosis was present on the left side, but now was rather a hypostereognosis. The reflexes were about the same as at previous examination.

On December 11, 1908, the patient was up and walked around for a few minutes, but needed assistance. His station was fairly good, with eyes opened or closed. His gait was rather spastic, some ataxia being apparent in the left leg, which became more marked when the eyes were closed.

On December 20, 1908, the patient walked without assistance. His gait was distinctly less spastic and awkward than at the time of the previous record. Ataxia was not noticed in the left leg. The ataxia had decreased in the left upper extremity, so that at this time it was present but to a slight extent.

Tactile, pain and temperature senses were normal on both sides of the body. The sense of position was markedly improved on the left side.

Ability to recognize objects with the left hand had distinctly improved, but was not normal. Hypostereognosis was present. The reflexes were the same as when admitted.

## Society Proceedings

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### PHILADELPHIA NEUROLOGICAL SOCIETY

February 26, 1909

The President, DR. T. H. WEISENBURG, in the Chair

Dr. S. D. Ludlum presented a paper on "Cardiac Crises in Tabes."

Dr. S. Weir Mitchell thought the case interesting and stated that he has had more than one case lately in which the neuralgias of ataxia were largely due to storms. In one case seen that day it had become pretty clear that a large percentage of attacks of neuralgia were due to storms. The patient thinks that his gastric crises have the same relation to weather that his ordinary neuralgia has.

Dr. Alfred Gordon also thought the subject of crises is a very important one from a diagnostic standpoint. In 4 cases observed during the last three years cardiac crises were present in one of them, as the first symptom of the tabes. He remembered three cases where the head pain was severe, and paroxysmal coming on without any particular cause, and as everything else was eliminated for a long time the diagnosis could not be made as to the cause of the sharp pains in the head. The patient began to develop gradually other symptoms, bladder disturbances and shooting pains in the legs. The shooting pains in the leg occurred simultaneously with the shooting pains in the head, so from this standpoint it is a very interesting observation that sometimes sharp shooting pains in the head may be the initial symptom of tabes. He has at the present time under his care a tabetic who also developed sharp severe pain in the region of the heart and for a long time has had it. After six months the symptoms of tabes began. At present he has not only pains sharp and shooting in character around the heart, but in the legs. So from the practical standpoint it is well to notice that pains may occur in any part of the body as an early and initial sign of tabes.

Dr. F. X. Dercum asked Dr. Ludlum whether he has himself observed the man during cardiac crises, and if so, whether he has made observations of the variations in the pulse, blood pressure, etc.

Dr. John H. W. Rhein said that when he was resident physician at Blockley he had under his care a tabetic who suffered from frequent attacks of tachycardia, unassociated with pain. These attacks occurred frequently, and sometimes lasted an hour or more. During the attacks the pulse was so rapid that it could not be counted, and it was necessary to auscultate the heart in order to count the beats, which frequently amounted to 180 per minute. There was, as he remembered, no lesion of the heart whatever, and he looked upon the symptom of tachycardia as a cardiac crisis.

Dr. S. Leopold asked whether Dr. Ludlum had noted the character of these pains and how he could distinguish them from angina pectoris, a condition which these crises might simulate.

Dr. Ludlum, in closing, stated that he did not know any particular

way of discriminating between angina pectoris and the pains which were described as cardiac crises. Angina pectoris might occur in the course of tabes, he presumed, if there were sufficient arterio-sclerosis or other condition. He had never seen the man in an attack. He has never had an attack when Dr. Ludlum has been able to see him, but his description was about as follows: that he would suddenly feel a sharp, shooting pain in the left side of his chest, that he would become short of breath, flushed and the pulse would go thumping along at a terrific rate. No more exact data than that could be obtained.

### A CASE OF LANDRY'S PALSY WITHOUT FATAL TERMINATION

By J. H. W. Rhein, M.D.

The patient, an Italian 21 years of age, applied to the Dispensary for Nervous Diseases of the Howard Hospital, on January 13, 1909, with a statement that, on January 8, at 8.30 P. M., (having previously felt perfectly well) on leaving his place of business he experienced some pain in the calf of the left leg and gradually increasing weakness of the leg. On January 10 the weakness extended to the right leg, increasing gradually until he was unable to walk or sustain his weight upon his legs for more than a few seconds.

On January 13, when he came to the hospital, which was 5 days after the onset of the disease, his condition was as follows: He was unable to stand for more than a few seconds unsupported; could not walk without assistance; and complained of some pain in both legs, referred to the calves. The knee-jerks were increased and equal on both sides; the ankle-jerk was present but slight; there was no Babinski, the plantar reflex was absent, the epigastric reflex was active, and the cremasteric reflex present.

There was some slight tenderness in the left calf, but none elsewhere. Both feet were cold to a little above the ankle. Sensation to pin-point was everywhere intact.

All the muscles of the legs, when tested separately, showed great weakness, with the exception of the anterior thigh muscles on both sides, which were apparently normal in power, and the adductors which also showed about normal power. The extensors and flexors of the feet were especially weak. Lying on the stomach the body projecting over a couch he could neither support the body nor elevate it.

At this examination there was apparently no atrophy and the grasps were equal and good.

Electrically there seemed to be a slight faradic diminution in the posterior calf muscles, but all the other muscles responded well to the faradic and galvanic currents.

The family and previous histories were negative.

He was admitted to the house January 13, 1909. The following day the paralysis of the flexors and extensors of the foot had increased so that there was no motion whatever in the toes of the feet. The grip in the right hand was also weaker than in the left.

Three days later, on January 17, the left anterior thigh muscles had become very weak, and the right grasp was perceptibly weaker than the left.

Electrical examination on January 21, 13 days after the onset of the



illness, showed plainly diminished faradic contractility in the calf muscles, but no change in the thigh muscles or in the arm.

On January 23 there was slight quantitative and qualitative change in the muscles of the leg to the galvanic current. The posterior calf muscles showed slight reactions of degeneration. CaCIC was still greater than AnCIC, but the muscles responded sluggishly, in a manner characteristic of the beginning reactions of degeneration. This change was found in all the muscles of both legs, excepting the anterior thigh muscles on the right. The extensors of the right arm showed a slight quantitative change to both the faradic and galvanic currents. The gluteal muscles showed slight qualitative change, but the lumbar muscles responded normally.

On February 2 the reactions of degeneration were more marked in all the muscles of both legs, with the exception of the right anterior thigh muscles which reacted normally. Faradic irritability was lost in the left anterior calf muscles.

Two weeks later the muscles reacted better to both currents and an examination made February 25 showed marked improvement. CaCIC > AnCIC in all the muscles, and the reaction to the galvanic current was quicker than at previous examinations. At this date he had improved so much that he was able to walk around the room holding on to the beds, though he dragged the right leg very markedly.

The knee-jerks were present, slightly increased and equal. There was no plantar reflex. Upon irritating the sole of the foot there was a doubtful Babinski sign observed on the right. None on the left.

There was some slight tenderness in the calf muscles, and this was present at this examination also.

The sphincters remained intact, although he complained that 2 or 3 drops of urine were passed after he had finished urinating on several occasions.

Sensation to pin-point remained at all times undisturbed. Tests for other forms of sensation were made with negative results.

This case presents some difficulties in diagnosis, resembling in some respects neuritis, in some respects Landry's paralysis, and in some respects myelitis.

The flaccid paralysis with increased reflexes, and possible involvement of the sphincters, make one think of myelitis, but the absence of sensory symptoms outside of the subjective sense of pain complained of, and the course of the disease are against this diagnosis. The age of the patient is somewhat against a diagnosis of poliomyelitis (although of course it is well known that this disease may develop at the age of 21 years) and it is not usual for the paralysis to develop without some constitutional symptoms, although in children of course these may be overlooked. The preservation of the knee-jerks, however, three weeks after the onset of the disease is very much against a diagnosis of poliomyelitis, although the knee-jerks may be increased at first. Dr. Rhein had never seen them increased when the anterior thigh muscles have undergone the reaction of degeneration. It is certainly unusual to see increased reflexes when the reactions of degeneration are present in the anterior thigh muscles, which was true in his case.

The history of sudden onset, the rapid increase in the paralysis, beginning in the left leg, then extending to the right leg on the second day, involving also the gluteal muscles, and later extending to the extensor muscles of the right arm, are strongly in favor of a diagnosis of Landry's

paralysis. While the reflexes are usually abolished in Landry's palsy, there have been cases reported in which the reflexes were present, or increased (Brissaud), so that the presence of increased reflexes does not exclude this diagnosis. In typical cases of Landry's paralysis, becoming fatal in a short time, the electrical reactions have remained unchanged. But Oppenheim has made a statement that the reactions of degeneration have been found in some cases, and it would not be difficult to explain the presence of reaction of degeneration in cases of long duration in the light of our present knowledge of the pathology of this disease.

The cessation of the spread of the paralysis and the rather rapid improvement in this case could be taken as evidence against a diagnosis of Landry's paralysis, as the usual termination is fatal in a week or ten days; but there are also on record cases in which a diagnosis of Landry's paralysis has been made which have not ended fatally.

Dr. Rhein viewed this case as possibly one of acute ascending paralysis and due in part at least to a neuritis.

Dr. Dercum said the case impressed him as a motor neuritis. Of course motor neuritis without sensory involvement is rare. Dr. Rhein did not lay stress on the entire absence of pain over the nerve trunks, and the fact, too, that the palsies were mainly distal, irregular in distribution and in one arm and not in the other, he thought would exclude so symmetrical an affection as Landry's palsy. The exaggeration of the knee-jerks was not in Dr. Dercum's judgment absolutely negative in motor neuritis. That seemed to him the most probable explanation of this very interesting case.

Dr. W. G. Spiller said he agreed with Dr. Dercum that the case was probably one of motor neuritis. The knee-jerk on the left side was diminished. There was no Achilles-jerk and there was some tenderness to pressure over the calf muscles. Dr. Spiller has a man under his care at the present time similar to the one presented. He saw him first in September and the case was supposed by his physician at that time to be one of Landry's palsy. He had no changes of sensation objectively, and he has none to this time. He soon developed tenderness of the calf muscles to pressure and later had glossy skin. He was completely paralyzed in his lower limbs and partially in the upper limbs. Landry's palsy is not a disease; it may be a multiple neuritis of the motor type or poliomyelitis.

Dr. John H. W. Rhein said, in closing, that the absence of atrophy of the muscles, to which Dr. Weir Mitchell had called especial attention, the fact that the knee-jerks were really increased from the beginning, and were still quite marked, together with the entire absence of any disturbance of sensation, outside of the subjective complaint of pain in the calf muscles (which was not great, nor had been great at any time), were really against a diagnosis of multiple neuritis.

A very interesting observation, he stated, was the fact that the knee-jerks on the left side were increased at the same time that the anterior muscles of the thigh exhibited the reactions of degeneration. This, he thought, was rather an unusual observation, and he said that he did not remember ever having seen an active knee-jerk when the muscles of the anterior part of the thigh had undergone marked reactions of degeneration. He still adhered to the probable diagnosis of Landry's paralysis, but did not accept the view that Landry's paralysis was a disease with a fixed pathological basis, believing that there may be in such cases a peripheral neuritis, or disease of the cells of the anterior horns of the spinal cord, or possibly both.

Dr. T. H. Weisenburg presented a case and paper on "Cerebellar Meningocele."

Dr. Weisenburg said the skiagraph showed an opening at the seat where a possible meningocele was believed to exist. The child was intelligent.

### UNUSUAL CASES OF NEURITIS ASSOCIATED WITH SPINAL SYMPTOMS

By F. N. Dercum, M.D.

CASE I.—F. F., aged 42, a machinist with an unimportant previous clinical history, suffered four months ago from a severe cut of the palm of the right hand. The cut in the hand did not heal readily, but suppurated and was swollen and inflamed for a long time. After the wound had finally healed he noted that there was decided weakness in the right hand and forearm and that this steadily increased. This weakness was associated with pain, sometimes shooting in character, extending from the wrist up the forearm. Examination reveals a wasting involving the thenar and hypothenar eminences, some wasting of the muscles of the right forearm, a smaller degree of wasting of the muscles of the upper arm, but a very decided wasting of the muscles of the shoulder girdle. This wasting of the muscles of the shoulder girdle is present upon both sides, though it is most marked upon the right side. It is noted that the left arm and hand also present unmistakable evidences of wasting. Every now and then fibrillary twitchings are observed in the muscles of the shoulder girdle upon the left side and also in the left upper arm. Marked tenderness is still present in the nerves over the forearm upon the right side.

Dr. Dercum pointed out that the symptoms which the man presented were not only those of a neuritis of the right arm, a neuritis which had been infectious in character, but also that there was present a poliomyelitis rather rapid in its progress, and that symptoms were unmistakably present upon both halves of the shoulder girdle and involved both upper extremities, though the right upper extremity suffered evidently decidedly more than the left. In his mind the etiological relationship between the infectious neuritis in the right hand and arm and the poliomyelitis could not be excluded.

CASE II.—The second case was that of J. P., aged 58, painter. In early life this man had been an acrobat and contortionist and had possessed fine muscular development with an unusual mobility of the joints. His early history was uneventful save that he had some thirty years ago an attack of lead colic. He had used alcohol moderately, had had gonorrhea, but denied syphilis. About two years ago he began to suffer from cramps in his fingers and from sensations of heat and cold in the arms above the elbows. He also had strange sensations in his lower legs and feet. Says that he began to feel as though he were "walking on his bones." Both the forearms and the legs felt sore to the patient, but they were not tender to the touch. There was also present a sensation of aching in both arms and legs, though this did not seem to be very pronounced. Wasting was not present anywhere save in the thenar and hypothenar eminences of both hands. There was also a slight wasting about the shoulder girdle. Fibrillation also was present. The knee jerks were increased.

The case suggested the existence of a diffuse multiple neuritis associated possibly with cord changes. The wasting in the shoulder girdle, the wasting of the intrinsic muscles of the hands and the plus knee-jerks certainly suggested amyotrophic lateral sclerosis, while the paresthesia and pains present in the extremities suggested a multiple neuritis.

In seeking for a possible cause, chronic lead poisoning, of course, suggests itself, and yet it is remarkable that the development of the symptoms should have been deferred for so long a time. A blue line upon the gums is not present nor is there any weakness of the extensor muscles.

Dr. F. X. Dercum presented a case of "Poliomyelitis in Adult Following a Wound in the Hand," with patient, for diagnosis.

Dr. Ludlum said that a couple of years ago, in the *Review of Neurology and Psychiatry*, some cases were reported by Bruce in which infection of the hand had occurred and the infection involved the arms very much as in Dr. Dercum's patient and kept on traveling in the nerve sheaths until it got into the cord and caused degeneration of the gray matter in the cord, showing symptoms very much like those of Dr. Dercum's patient.

Dr. Dercum thought the case was rather suggestive of multiple neuritis, being sensory in type, in which there has been some wasting but suggestive possibly of an amyotrophic lateral sclerosis, though he admitted that the wasting of the shoulder girdle was not pronounced. The fact that the man had been a worker in lead, although he has had no signs of lead poisoning, was also to be borne in mind.

Dr. S. Weir Mitchell read a paper on "Chorea of Emotion."

Dr. Dercum said he rose to his feet, not because he had anything to add, but to express the deep interest that it excited in the minds of the members of the society, as every paper does, of course, that Dr. Mitchell puts before us. Our French friends, Janet among others, would doubtless classify the case among the psychasthenias, and German writers among the psychoses of intention.

Dr. Mitchell's patient had been subjected to considerable strain of memory and possibly there had been in this a cause leading to diminished emotional inhibition, or emotional control. Of course we can only speculate in regard to affections of this kind. We have nothing tangible from which to judge.

Dr. J. Hendrie Lloyd asked whether the condition spoken of by Dr. Mitchell was really not one of psychasthenia, a condition of self-consciousness and inability to control excitement? Any little nervous tension may then result in inhibitive conceptions. Dr. Lloyd also asked the age of the man. Dr. Mitchell replied 45.

Dr. Mitchell, in closing, said he had little to add except to put rather more stress on one matter. It is common knowledge that the knee-jerk is greatly increased by emotion. The irregular movements described in this paper were no doubt due to overflow of energy from ganglia emotionally excited.

#### MERALGIA PARESTHETICA RECURRING WITH REPEATED PREGNANCIES: CASE REPORT

By George E. Price, M.D.

Female, white, aged 31 years; family and previous personal history presenting no features of interest.

Her symptoms commenced in July, 1907, when she was two months

pregnant (first pregnancy) and increased in severity for four months, at which time she miscarried. Following the miscarriage there was a slight improvement for a few weeks, then the symptoms remained stationary for six months, finally disappearing under treatment, recurring however, during a subsequent pregnancy several months later.

The symptoms did not differ from those as originally described by Bernhardt and Roth, except for the presence of a line of tenderness upon pressure along the upper part of the thigh, corresponding to the course of the external cutaneous nerve. This was considered as additional evidence pointing toward the "neuritis theory" held by Bernhardt.

Treatment consisted of rest, hot fomentations locally and aspirin internally. Galvanism was applied with the cathode over the lumbo-sacral spine and the anode over the affected area.

Presentation of a "Case of Myopathy of Unusual Distribution."

W. H., female, white, aged 17. A patient from the neurological dispensary of the Jefferson Hospital. Family history negative as to myopathy, neuropathy or tuberculosis.

Previous personal history negative except for a severe attack of chorea when nine years of age. The onset of her present symptoms had been gradual, attention having been first attracted about two and one-half years previously to a deformity of the front of the chest, and later to a flaring of the right scapula. These were due to a wasting of the muscles underlying the right scapula, which allowed that bone to slip from its anchorage, and to override the shoulder upon any attempt to elevate the arm or bring it forward. The arm could not be raised above the level of the shoulder. During the past six months the same symptoms had appeared to a slight degree upon the left side. The deltoid, biceps, triceps and intrinsic muscles of the hands were all unaffected. There was no wasting of the muscles of the lower extremities and no pseudohypertrophy. There was no history of pain or trauma and no fibrillation. Electrical reactions and tendon reflexes were normal. The case was differentiated from disease of the long thoracic nerve, chronic anterior poliomyelitis and congenital elevation of the scapula.

## NEW YORK NEUROLOGICAL SOCIETY

March 2, 1909

The President, DR. J. RAMSAY HUNT, in the Chair

### A CASE OF HYSTERICAL MUTISM

By William M. Leszynsky, M.D.

The patient was a man 52 years old. Prior to his present disorder he had always enjoyed good health. Seven months ago, after some financial losses, his speech became stammering for a day or two and then was completely lost. Since that time he had not spoken. There had been no recurring utterances, exclamations nor jargon. His hearing was perfect and he understood what was said to him and promptly obeyed all commands. He was able to communicate in writing. He wrote legibly, correctly and with good sense, and also to dictation. He read (visually), understood what he read and copied correctly. He named all objects correctly by writing. He was right-handed.

When instructed to open his mouth and protrude his tongue he made the most energetic efforts and finally succeeded in separating his jaws about one inch. When Dr. Leszynsky attempted to open the jaw by force, it was voluntarily opened to a normal degree. The tongue and facial muscles were apparently normal. He swallowed normally, his appetite was good and he masticated his food. The pharyngeal reflex was active and there was no anesthesia. No aphonia. He could enunciate all vowel sounds and under suggestion and persuasion succeeded in saying "p" and "b."

The pupils, ocular motility, corneal and lid reflexes and eye grounds were normal. The upper extremities were normal excepting a slight tremor in the outstretched hands. There was no static ataxia. In walking there was a slight extensor rigidity in the right lower extremity, with intact muscular power and resistance, exaggerated knee-jerk and ankle clonus. The plantar and cremasteric reflexes were normal. There was slight ankle clonus on the left side and universal analgesia.

There was no evidence of renal or other visceral disease, and the blood pressure was practically normal. Dr. Leszynsky said he had etherized the man with the idea that it would restore his speech, but without success. He regarded the case as one of hysterical mutism or perhaps a subcortical type of aphasia.

### A CASE FOR DIAGNOSIS

By W. M. Leszynsky, M.D.

The patient was a man, 28 years old, who two years ago began to have slight pain in the dorsal region, extending to the right hypochondrium. The pain was somewhat sharp in character, and lasted about an hour and a half. Similar attacks recurred about three or four times, the pain increasing in intensity and duration. Six months ago the pain became more severe, burning in character, and radiating from the vertebræ to the lateral portion of the abdomen and below the right nipple. During the past four weeks there was a "burning" pain, almost continuous, below the nipple line. There was no girdle sensation, but the pain at times extended to the upper third of the right thigh anteriorly. No pain in the back or elsewhere. No bladder nor rectal symptoms. No history of injury to spine. No alcoholism nor syphilitic infection. The bowels acted normally. His appetite was good and he slept well.

Twelve years ago the patient had an eruption over the right side of the back and abdomen, extending to the knee. This was not accompanied by pain. There were numerous pustules, which were lanced. He continued at work as cashier in Austria during this attack, which lasted three weeks. Three years ago he was kicked by a horse, producing a compound fracture of the right tibia. For this he remained in the Presbyterian Hospital about three months. His mother died at the age of 54 from some abdominal disease. His father was living and had some pulmonary affection. His brothers and sisters were in good health.

Examination: Heart, lungs and abdominal viscera presented no evidence of disease. The urine and blood were negative. Pupils and eye grounds normal. The vertebral column was normal; there was no tenderness nor pain on pressure or percussion over the vertebræ or in the course of the intercostal nerves. The epigastric, abdominal and cremasteric re-

flexes were absent on the right side; normal on the left. The abdominal muscles were slightly wasted on the right side, with qualitative and quantitative decrease in faradic irritability. There was an area of analgesia, with loss of temperature sensibility and preservation of tactile sensibility extending anteriorly from about four inches below the nipple to about four inches below the umbilicus, and posteriorly from about the seventh thoracic vertebra to the level of the spine of the ilium. There were no other disturbances of sensibility. The patient's gait and station were normal. The muscular power and resistance in the ilio-psoas and other muscles of the lower extremities were normal. The right knee-jerk was exaggerated and slight ankle clonus was present. The plantar and Achilles reflexes were normal and the examination was otherwise negative.

Dr. Leszynsky, in presenting the case, thought the diagnosis rested between an unusual type of syringomyelia and an extra-medullary spinal tumor.

Dr. M. Allen Starr said the second case shown by Dr. Leszynsky impressed him as being one of syringomyelia. The dissociation of sensation, the preservation of the tactile sense and the loss of temperature and pain senses were all suggestive of a lesion in the central gray matter near the posterior commissure. The slight muscular atrophy on one side of the body also strengthened that diagnosis. The destruction of the gray matter of the cord seemed to be an adequate explanation of the symptoms present. In syringomyelia, the tendency of the lesion was to involve quite a number of segments of the cord, and while in the majority of cases it was located in the cervical region, yet it might involve the dorsal and lumbar regions. In this case, the lesion apparently extended from the sixth dorsal segment down to the first lumbar. The pain might be explained by an irritation of the posterior nerve roots at their termination in the gliomatous tissue, and the presence of pain was not necessarily an evidence of its not being a syringomyelia involving one-half of the cord. The exaggeration of the knee jerks might be attributed to the breaking down of the tumor, and involving the lateral column of the cord.

Dr. Starr said he had come to regard syringomyelia as rather more common than was formerly supposed. Probably seven or eight cases were seen at the Vanderbilt Clinic every year, and they were much more frequent than multiple sclerosis.

## A CASE OF THROMBOSIS OF THE LEFT ANTERIOR SPINAL ARTERY IN THE MEDULLA OBLONGATA

By I. Abrahamson, M.D.

This patient, when he was originally shown to the Society, on April 7, 1908, presented the characteristic syndrome of a thrombus in the left posterior inferior cerebellar artery, *i. e.*, a patient with a chronic nephritis had prodromata consisting of left-sided headache, vertigo, vomiting, mental confusion, etc.; then a gradual development of ataxia, falling to the left, dysphagia, aphonia and numbness of the left face. Examination showed dissociated sensory disturbances over the left trigeminal distribution, and over the right side below the distribution of the fifth nerve; sympathetic ophthalmia, left; ataxia, left; very slight right hemiparesis; paralysis of the left palate and larynx; anesthesia of the same; irregular heart action, etc.

The patient made only a partial recovery, the sensory disturbances persisting, but to a less degree and extent.

In July, 1908, without prodromata, and without loss of consciousness, the patient was found paralyzed in the left and upper extremities, the tongue and neck. The throat was filled with mucus. There was an elevation of temperature, and rales over the lungs. When Dr. Abrahamson saw the patient about 24 hours later a typical left hemiplegia, exclusive of the face, was found, including the left tongue and the left sterno-cleido-mastoid. Sensory disturbances over the left face and right half of the body, as before. No astereognosis in left hand.

A diagnosis of thrombosis of the terminal branch of the cerebral, just before its junction with the right anterior spinal, was made. Whether this was a continuation of the old thrombus of the left inferior cerebellar, including now the anterior spinal, or a separate thrombus, could not be established at present.

The rarity of occlusions of this vessel seen and recognized clinically, and its sequence to a plug in the posterior inferior cerebellar artery made the case an extremely interesting one.

### SUB-DURAL AUTO-DRAINAGE IN INTERNAL HYDROCEPHALUS

By Alfred S. Taylor, M.D.

In this paper Dr. Taylor said that one of the sequelæ of cerebro-spinal meningitis was internal hydrocephalus. In this the chief damage was the result of the mechanical distension from within outward of the brain, which interfered with its circulation and with the developmental processes which were particularly active in young children, and which caused certain pressure atrophies, notably in the optic chiasm. For the relief of this distension various means had been tried, such as tapping, which gave only temporary relief, while repeated tapings were apt to be followed by infection, and permanent external drainage had almost invariably been followed by infection and death.

Sub-dural auto-drainage had a number of advantages over other methods: It led the ventricular fluid to the subdural space, where it should normally circulate and be absorbed. There was no chance for infection excepting at the time of the operation. The drainage was constant and permanent in successful cases. The wound was closed tight, so that there was no troublesome fistula, and there was no disfiguring infiltration of the soft tissues.

The technique of the operation, as first described by Dr. Taylor in *The American Journal of the Medical Sciences*, August, 1904, was briefly as follows: It consisted in turning down an osteoplastic flap just above and behind the right ear, turning down a smaller flap of dura, and inserting one end of the drain through the second temporosphenoidal convolution into the ventricle, and slipping the other end beneath the dura downward toward the great lymph spaces at the base of the brain. The drain consisted of 40-day chromic catgut, surrounded by Cargile membrane. The wound was closed tightly by layer sutures.

Dr. Taylor then reported in detail a case referred to him by Dr. J. F. Terriberry, in which he had resorted to this method with very satisfactory results. There was marked improvement in the patient's mental and physical condition, as well as in the vision. Fourteen months after the operation, the child died of gastro-enteric disease.



Dr. Taylor reported the use, in a more recent case, of a vein from the father's arm as a drain between the ventricle and the subdural space. At the end of a week it seemed likely that the vein had retained its vitality for there was no undesirable reaction.

Dr. L. Pierce Clark said he had seen several cases of chronic idiopathic internal hydrocephalus where this operation of sub-dural auto-drainage had been done, and these cases did not lead him to believe that the patency of the canal had been fully maintained. With the modification suggested by Dr. Taylor, namely, using a vein for drainage purposes, he thought that better results would be obtained. The practical value of the operation, however, must always be limited. It is a mistake to think of chronic internal hydrocephalics having anything more than a very limited range of intelligence. Accounts of genuises who were or ever had been truly hydrocephalic are to be looked upon as spurious. Rachitic enlargements of the head are often thought to be truly hydrocephalic, but this is not really the case. The criteria of more accurate diagnosis ought to clear this continued source of error in medical writings.

The President, Dr. Hunt, said that this condition is not always easily recognized, was brought home to him by a case recently seen at the New York Hospital. An 18 months old child had passed through an attack of acute cerebro-spinal meningitis, some months before, but the rigidity of the neck and limbs persisted. An examination of the cerebro-spinal fluid at this time was negative both as to cellular elements and microorganisms. It was assumed that the microbic process was over, and that the continuation of the symptoms was due to inflammatory exudate on the surface of the brain and cord. There was no increase in the size of the child's head, the fontanelles were not bulging, there was no separation of the sutures, and the optic discs were normal, so that internal hydrocephalus was excluded. The child died, and at the autopsy, in addition to a considerable amount of "soapy like" exudate over the base of the brain and the spinal cord, there was found a very well-marked internal hydrocephalus.

Dr. J. F. Terriberry, referring to the case which Dr. Taylor had reported in detail, said that he saw the patient four or five months after he was last seen by Dr. Taylor. At that time the improvement in the symptoms had progressed to such an extent, and the child's aunt was so well satisfied, that she wished to have a second operation done. The child subsequently disappeared, and he was unable to report regarding its final condition.

Dr. Terriberry said that in the current (March, 1909) number of the *Annals of Surgery*, Dr. Russell S. Fowler reported three cases of internal hydrocephalus upon which he operated very recently. In two of these, after determining that there was free communication between the ventricles and the spinal cord, he made a spinal peritoneal anastomosis with a silver tube by the Cushing method. In one of these there was considerable improvement, and the disease seemed to be arrested. In the other, death occurred ten hours after the operation. In the third case there was no communication between the ventricles and the spinal cord, due to adhesions around the base and cerebellum. While attempting to free these the child suddenly expired.

Dr. Terriberry said that in spite of the high mortality that operative interference gave in these cases, we should bear in mind that these children were practically useless. The mortality of the operation at present ranged between 60 and 70 per cent.

Dr. B. Onuf said we should be rather guarded in our statement that these patients were useless members of society. A considerable degree of hydrocephalus was compatible with a fair degree of intelligence.

## THE PRESENT STATUS OF THE SERUM TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS

By Simon Flexner, M.D.

Dr. Flexner spoke on the criteria of the action of the anti-meningitis serum prepared by Dr. Jobling and himself and showed that the administration of the serum quickly reduced the number and destroyed the viability of the diplococci, reduced the period of illness, increased greatly the number of cases terminating abruptly by crisis, tended to suppress the chronic form of the disease, and then reduced the mortality of the affection. An analysis of 523 cases gave a gross mortality of 29.6 per cent. The fulminating cases are not excluded from this tabulation. In regard to age, the mortality was lowest in the group between five and ten years, where it fell to 15.4 per cent. It was highest in the group between one and two years, as would be predicted from the known high mortality of the disease in infants. But when the cases in this group were analyzed according to the period of the first injection of the serum, an astonishing result was obtained: the mortality in 11 cases injected in the first three days was 9 per cent., and of fifteen cases injected from the fourth to the seventh day, 21.1 per cent. These figures, he thought, possessed considerable significance. Excluding the age group of one to two years, the highest mortality was found in the age group between fifteen and twenty years, which was 31.7 per cent., and 20 years or over, which was 39 per cent. Contrary to what had been observed in the other groups, the highest mortality in these two groups was among the cases treated in the first to the third day period. This was in part explained by the occurrence in these groups of a higher proportion of fulminant cases of the disease, but whether or not still other causes did not contribute to the discrepancy they were not at present prepared to say. The subject was one that was now claiming their attention. It had already been alluded to in one of their previous publications, wherein it was pointed out that the high mortality among these ages occurred among cases treated singly, namely, by physicians having had little experience with the use of the serum.

Dr. Henry Koplik said the subject had been covered so thoroughly by Dr. Flexner that he would simply limit his remarks to one phase of it. While it was impossible, in the absence of any epidemic, to say what the serum would do in cerebro-spinal meningitis, and while it was too early to draw any conclusions, still he thought there was no doubt that it had already accomplished something. Many remedies had been tried in this disease, and had proven absolutely valueless, but that was not the case with the serum. It had a distinct, active influence on the course of the disease. A day or two after its injection there would be an entire change in the characteristics of the cerebro-spinal fluid, together with a great diminution of the number of bacilli, or sometimes even their entire absence. The serum apparently exerted a direct effect on the microorganisms of the disease; under its influence they diminished in number and the purulent cases rapidly cleared up. On the other hand, there were one or two cases—probably exceptional ones—in which the serum failed to exert any effect

on the number of the microorganisms or the character of the cerebro-spinal fluid. The speaker said he had no explanation to offer for this. He could recall two such cases, both in children under two years of age. Still, the mortality in these young subjects had been reduced below 40 per cent. since the introduction of the serum.

Another effect of the serum was that it certainly had shortened the duration of the disease. In many of the cases where it was used, the patients became thoroughly convalescent within a week or ten days. Furthermore, it did more to control the temperature than any other remedy with which he had had any experience.

Speaking of the foudroyant cases, Dr. Koplik said they were only seen during epidemics, and while those that had come under his observation were comparatively rare, of the cases treated by the serum he had 15, of which two died and all above two years of age recovered. Those that died were below one year of age. This certainly was a record hitherto unattainable. One of the cases was a purulent meningitis complicated with lobar pneumonia in both lungs. This case made an uncomplicated recovery.

Dr. B. Sachs thought the supreme test of the serum treatment in cerebro-spinal meningitis was whether any benefit was derived from it in the fulminating cases, either in children or in adults. Personally, the most severe cases he had seen were in very young children and in patients ranging between 14 and 20 years of age. If the serum were a positive cure, it would be extremely important for us to know whether or not it could be relied upon to counteract the effects of the poison, even if administered on the third or fourth day of the disease. While the statistics at our command were still very small in number, we had reason to congratulate ourselves, and particularly Dr. Flexner, upon the discovery of what seemed to be a successful method of treating cerebro-spinal meningitis.

Dr. Leszynsky said he had seen two cases treated by the serum, one a boy of thirteen and the other a man of thirty. Both were very severe cases, and both showed immediate improvement, particularly the boy. Both patients recovered. The speaker said we should not lose sight of the fact, however, that in the course of an epidemic there are abortive cases.

Dr. Ramsay Hunt said he had seen some of the cases at the Babies' Hospital treated with Dr. Flexner's serum. One case in particular that occurred there about six weeks ago seemed to give proof of the value of the treatment. The child, aged 2 years, was brought into the hospital with the history of having been taken ill the day before. The extremities were cold, there was cyanosis and the child showed every evidence of great prostration. Upon lumbar puncture, a turbid fluid was withdrawn which contained the meningococcus. Clinically it was a desperate and apparently a hopeless case; it looked as if the child could only live a few hours. About 50 c.c. of cerebro-spinal fluid were immediately withdrawn, and then 40 c.c. of serum were injected. The child was then infused, stimulated, surrounded with hot bottles and the foot of the bed elevated. On admission the child had no temperature, a fact that was attributed to the collapsed condition. On the following day the patient had cleared up somewhat mentally, and there was some fever. About 35 or 40 c.c. of cerebro-spinal fluid were again drawn off, and a second injection of the serum, of similar amount, given. This was repeated each day for five days, the temperature gradually subsiding, the symptoms clearing at withdrawal of cerebro-spinal fluid and injection of serum, and in

the course of two weeks the child was practically well. Petechiæ and purpuric spots were present on the second day of the disease and this case, Dr. Hunt said, could be regarded as a fulminant type of the disease.

Dr. Flexner, in closing the discussion, said that he was indebted to Dr. Koplik for bringing up the subject of resistant cases. It was true that in a certain number of cases the diplococcus was not influenced by the serum, and it sometimes seemed to develop more numerous after the injections than before. In other instances again the microorganism was apparently uninfluenced for a number of days after the treatment was commenced and then began to diminish in number, perhaps for other reasons than the use of the serum. Cultures of diplococcus from these cases had been taken, and an effort was now being made to discover whether they possessed properties different from those of the common variety, which was so markedly influenced by the serum. It is quite possible that there were strains or varieties of the microorganism that could not be influenced by this serum.

In answer to Dr. Sachs, the speaker said that a number of so-called fulminant cases had been reported as cured under the use of the serum. Whether they were actually fulminant cases or not he could not say. He did know that certain so-called fulminant cases had died promptly in spite of the injections of the serum.

#### PSYCHO-PHYSICAL INVESTIGATIONS WITH THE GALVANOMETER

By Frederick Peterson, M.D., and E. W. Scripture, M.D.

The authors stated that in 1888 Féré observed that various sensory stimuli produced changes in the deflection of a galvanometer that indicated the amount of current passing through a person. In 1890 Tarchanoff published a paper entitled "Galvanic Phenomena in the Human Skin in Connection with Irritation of the Sensory Organs and with Various Forms of Psychic Activity." Further investigations along these lines were made by Sticker, Sommer, E. K. Müller, Veraguth, Peterson and Jung, Binswanger, Ricksher, Prince, Sidis and Kalms.

The present investigations were undertaken for the purpose of settling definitely what bodily changes produced the electric effects. The apparatus used consisted of a Weston-D'Arsonval galvanometer of great sensitiveness to which two electrodes were connected. No battery was employed. To perform an experiment the patient put his hands on the electrodes, and thus entered the circuit as a resistance. The large resistance was then adjusted until the galvanometer pointed to zero; it then equalled the body resistance. Any change in the body resistance (coughing, emotion, etc.) upset the equality and caused a deflection of the galvanometer. The method could be made of any desired degree of sensitiveness. The experiments indicated that all mental work was accompanied by some degree of deflection, although intellectual conditions were less effective than emotional ones. Emotional changes, coughing or long breaths, produced merely an increase in the amount of the deflection, but never a change in the direction nor a decrease in the amount. This proved conclusively that the emotions, etc., decreased the electrical resistance within the body and did not generate electricity. These experiments, as well as the work of other investigators, definitely disproved the

view of Sommer that the phenomena were artefacts. It had also been disproved that the deflections resulting from emotions, etc., were due to circulatory changes produced by the mental states, nor were they the result of variations in temperature. The only other supposition was that the deflection was produced by changes in the body resistance. This would explain the increase in deflection in all the experiments reported. The chief resistance of the body lay in the skin, and the effect must be attributed to variations there, and we finally came back to the original supposition that the change was due to the activity in the sweat glands. Change in resistance might be brought about either by saturation of the epidermis with sweat, or by simple filling of the sweat-glands, or by both combined.

Dr. Walter Timme, in referring to the possibilities of Dr. Scripture's experiments, stated that in various individuals under stress of the same emotion, the sweat glands of different areas of the skin would be affected with an increase or decrease of their secretion. In no two subjects would these areas be exactly alike and therefore it would depend entirely upon the relative position of the electrodes as to the character of the deflection of the galvanometer needle. Under the same emotional influences, the needle might show in such various individuals either positive or negative deflections. Indeed, if the electrodes were placed on areas in which the sweat glands were uninfluenced, there might be no deflection whatever. This would also account, probably, for the negative case found by Dr. Scripture.

Dr. Ramsay Hunt, discussing Dr. Scripture's paper, asked if the question of reaction time had also been considered in his experiments. The deflection of the needle follows very closely upon the emotion in some instances.

Dr. Scripture, in closing, said there was an interval of from two to five seconds between the movement of the needle of the galvanometer and the emotion that produced it. It never started instantaneously. In regard to the covering of the hands with shellac or paraffin, the speaker said this must have been defective in the experiments of Sidis and Kalmus. These authors state that the deflections remain the same as without such a covering, whereas an effective covering would have at once cut the current down to zero.

## CHICAGO NEUROLOGICAL SOCIETY

January 28, 1909

The President, DR. RICHARD DEWEY, in the Chair

### DEMONSTRATION OF A CASE OF MULTIPLE SCLEROSIS, WITH PRIAPISM EXTENDING OVER A PERIOD OF EIGHTEEN YEARS

By Herman L. Kretschmer, M.D.

The patient, Mr. M., aged 67, entered the genito-urinary service of Dr. Louis E. Schmidt at the Alexian Brothers Hospital, January 7, 1909. The patient states that his present trouble began eighteen years ago, at which time he was engaged in packing ice. After working

for a few days at ice packing he was awakened at about 2 A. M. with an erection which was somewhat painful. He was awakened several times after this by erections. This condition gradually became worse, so that he would be awakened four or five times during the night. The erections became stronger, more frequent, and more painful. The pain of the erection was so severe that he was awakened by the pain. When he is awake erections promptly disappear, so that a good many nights he stays awake for the express purpose of not having any erections. The pain is situated in the penis, and the patient also complains of some pain in both groins. He never has these erections during the daytime. They are easily controlled by cold compresses, and he thinks they are not so frequent, nor that they come on so easily when he lies in a cold bed, and with this object in view he uses very light covers. Sexual intercourse is not painful. The sexual act has no apparent effect on the erection, for the erections appear as readily after sexual intercourse as they do after he has been using cold compresses. Pinching the inner side of both thighs also gives him a good deal of relief. The cold compresses which he uses for the purpose of controlling the erections he places on the perineum behind the scrotum. Patient says that as he gets older his condition is gradually getting worse. The erections come on as soon as he gets to bed, and they are more painful. Two weeks before admission, while turning out the gas-light during his work he noticed that he was reaching for the gas jet with his broom handle after he had turned out the light. Since this time he has the feeling in his left hand as though he wanted to catch hold of something. If patient concentrates his mind on his hand, his hand remains perfectly still, but when he walks, which he does with the aid of a cane, in his left hand, his right hand is continually going through these grasping motions, which stop just as soon as he thinks about them. About one month ago patient first began to have attacks of dizziness. There is no specific history obtainable.

*Examination of Genito-Urinary System.*—The external genitals are negative. Examination per rectum reveals a small prostate; otherwise the rectal examination is negative. The urine is clear, acid in reaction, pale, straw-color, specific gravity, 1026; no albumin, no sugar present. Microscopic examination negative. The blood examination, hemoglobin 95 per cent. White blood cells, 7,500. The nervous system. The pupils react to light and accommodation. Examination of the fundus is negative; movements of the eyeball are good. A slight amount of nystagmus is present.

*The Reflexes.*—The left Achilles jerk is absent, and the right is present. Ankle clonus not present. Babinski sign is present on the right side. The knee jerks are both very brisk, the right more so than the left. The cremasteric is present, but not very marked. The abdominal reflexes are markedly reduced. Pharyngeal reflex is present, and the corneal reflex is present. There are no disturbances of smell, taste, or feeling. The temperature sense is normal with the exception that the patient has some difficulty in recognizing the difference between heat and cold on the skin of the penis.

A CASE OF LOCOMOTOR ATAXIA IN A PATIENT PRESENTING  
NUMEROUS ULCERATING GUMMATA IN THE SKIN

By W. A. Pusey, M.D.

This patient came to Dr. Pusey's service six weeks ago, at the Cook County Hospital, on account of an ulcer on the right ankle and numerous ulcers over other parts of the body. These were characteristic late ulcerating syphilides and the patient at the same time showed a typical picture of tabes. This coincidence, which perhaps one might expect *a priori* to be of not infrequent occurrence, is unique and is apparently excessively rare. For the written report of the clinical findings, Dr. Pusey was indebted to his interne, Dr. S. B. Riley.

The patient is a cabinet maker, 43 years old, single, who denies ever having had a chancre. In 1894 he began to complain of pains which were considered rheumatic. Five years ago distinct lancinating pains in the limbs developed, and soon after also girdle sensation and difficulty in walking in the dark and in telling the position of the limbs. A year ago slow urination followed by incontinence and right-sided ptosis set in. Sexual desire had been absent for four or five years. The first cutaneous ulcer appeared on the neck three years ago and subsequently ulcers appeared in other locations, to be described later.

Examination revealed Argyll-Robertson pupils, absence of deep reflexes in the legs, extensive analgesia, marked ataxia of the legs, with loss of sense of position.

*The Skin.*—When the patient presented himself six weeks ago he had over the front and the inner side of the right ankle a large, tumor-like mass which had an oval deep punched-out ulcer at its center, the size of an egg. There was no involvement of the bone. The lesion was recognized as a large gumma with broken down center. On the right shoulder there was a large lesion consisting of a polycyclic-convex ulcerating border behind which there was an area of thin scarring as large as the palm of the hand. Over the left wrist, and on the right side of the chest, and at several other points over the body surface, there were other serpiginous ulcers. These were recognized as ulcerating syphilides. Under specific treatment all of these have healed in six weeks. In addition the patient shows over various parts of the body thin irregular outlined scars of former similar serpiginous ulcers.

## Periscope

### Psychiatrische-Neurologische Wochenschrift

(Vol. 9. May 25 to June 1)

Report of the Jahresversammlung des Deutschen Vereins für Psychiatrie.  
(April 26 to 28, 1907.) ALZHEIMER.

*The Grouping of Epilepsy.*—Alzheimer deals with the grouping of epilepsy from an anatomical view-point. As a foundation for his work he utilized the exact and complete examination according to a new method of 63 epileptic brains. The findings which he established in the glia are new.

Epilepsy may be classified anatomically and clinically. If one reaches the same results by both paths one may assume them correct. The section findings easily disclose that epilepsy is not a single disease. The epileptic seizure occurs with different diseases (tumor, paresis, dementia præcox, etc.). It is the problem to find out whether the different pictures (etiology, course and outcome) correspond to different anatomical pictures.

Since 1825 changes in the Ammon's horn have been known and in 40-50 per cent of cases are demonstrable. Weigert found disappearance of medullary substance. Nissl showed that the cells were changed in their arrangement, shrunken and calcified. The number of the glia nuclei is increased, the vessels thickened. The changes in the Ammon's horn explain, however, neither the dementia nor the seizures, and Bleuler and Weber have already demonstrated diffuse changes in other brain areas. The diversity of epilepsy makes it doubtful whether a disease with such variable course can be conceived as a unity. Also through experiments on animals it has been proved that the most variable poisons lead to the same results, *i. e.*, to convulsions. The conclusions from the section table and by microscopic research are very different. Therefore it is necessary, in order to clear up the situation, to go further. Alzheimer found in 40 per cent of his cases a disease process in the Ammon's horn. He demonstrated a preparation with proliferation of glia in the Ammon's horn. Even now diseased nerve cells and increased glia nuclei are found in the Nissl preparation. The changes in the Ammon's horn are considered as accessory. The disease process proceeds in jumps. The waste material is cleared away by glia proliferation. A frequent repetition of the attacks leads to atrophy of the nerve cells and reduction of the nervous substance. In the cortex of a man who had run amuck there was found increase of glia nuclei, decreased size of cells, a lessened number of cells, cortical gliosis, thickened vascular walls. In three cases of status epilepticus the writer found recent changes in the Ammon's horn. Rarely there was a small encroachment of the disease on the gyrus dentatus and the gyrus hippocampi. The whole of the characteristic changes in the Ammon's horn in these cases may be brought together in a single group, if the disease of this part of the brain is not to be made answerable for the clinical appearances of epilepsy, but they are a sign of a diffuse general disease,



which shows itself in cortical gliosis and glia proliferation of the cortex. Besides one finds also an accumulation of the glia cells in the first cortical layer and a thickening of the same (pyknose).

In some cases a peculiar sort of glia nuclei, not previously described were found, which separated, not from fibers, but from plates of characteristic color. In status epilepticus glia cells occurred, especially about the vessels, so-called ameoid cells. They are loaded with contents, variously colored granules, show vacuoles and quickly disintegrate. In the adventitial lymph sheaths of the vessels are found large strata of fat, fatty granular cells (mastzellen), occasionally also small clusters of lymphocytes.

Also in the central convolutions in cases that die of status epilepticus, especially in the neighborhood of the capillaries, are found demonstrable changes, ameoid cells, which are laden with myeloid and protagonoid granules, fat granules, etc. These disintegrate quickly and get into the adventitial lymph spaces. Between the glia cells are found a few lymphocytes, no plasma cells, but regularly fatty granular cells (mastzellen).

The nuclei of the glia cells commonly divide. Besides the destruction of the smaller axis cylinders can be seen. These acute changes are not found if there were no seizures for a long time preceding death. The chronic and acute changes were found in 60 per cent. of the cases examined which go to make up the great group of the epilepsies.

The groups of epilepsies arrange themselves in the following manner: (1) *Genuine epilepsy with disease of the Ammon's horn*, which, however, is only a part of a general disease of the brain. (2) *Epilepsy with atrophic sclerosis*, especially disease of the cerebellar lamella and high grade atrophy. Characteristic of the second group is an irregular atrophy with demonstrable disintegration of nuclei and fibers (so-called atrophic sclerosis). Alcohol and lead come under consideration as etiological factors. The seizures have no uniform histological foundation. (3) *Epilepsy with general disease*, especially syphilis and arterio-sclerosis. (4) *Epilepsy with idiocy*: Macroscopically not infrequently is found circumscribed thickening of the pia with atrophy of the underlying convolutions, microscopically one finds here absolute obliteration of the cortex. Fresh changes are nowhere found, in spite of frequent seizures. (5) *Epilepsy with defect of cerebral development*: The process is established in fetal life and continues until death. A special characteristic variety is known as tuberous sclerosis, with clear characteristic histological changes. Here belongs also that condition described by Rancke as the *stadium verrucosum*.

At the close the author mentioned tuberous hypertrophic sclerosis, which presents a difficult differentiation of ganglion cells and glia cells.

*The Clinical Grouping of Epilepsy.* H. VOGT. The understanding of so many-sided and in its boundaries so indistinct a subject as the clinical grouping of epilepsy, must be preceded by a definition of what is to be understood by epilepsy. The question is not an exhaustive description of this idea—what alone can be included in it—but only to approach the aim of a common understanding of a conventional territory, to make a firm foundation for the solution of the questions.

Considering the long list of epilepsies or epileptoid disease pictures, at one end stands psychic epilepsy, about which controversy is active (recall the names of Samt, Kraepelin, Siemerling, Aschaffenburg, Ræcke), at

the other end stands the group of epileptiform conditions, which we have learned to separate from genuine epilepsy, which, however, clinically may be very similar, such as uremic convulsions, eclampsia, parietic seizures, acquired hydrocephalus, etc. The groups should be separated, only such disease conditions should be discussed whose epileptic nature is not disputed from any side, which are distinguished by periodically recurring convulsions, progress with disturbance of consciousness, and further by an enduring alteration of the psychical personality.

As epilepsy presents clinically not the character of a disease but of a disease group, as we indeed possess some understanding of the biology of the epileptic attack, not, however, about the nature of the epileptic disease, so that grouping has the preference that does not classify nearly the whole territory, but that which out of the whole mass of clinical pictures lays stress on certain ones on the ground of clinical experiences, and fixes the limits as entities according to their etiology, symptom complex, course, outcome, etc., many of which pathological histology confirm as circumscribed types. Previous experience has given: in late epilepsy as indicated, in its nature different clinical pictures at times however surrounded by the character of true epilepsy. With the genuine epilepsy is the grouping mostly synonymous with the territory, that here formerly could be represented as a special type, ceases to belong to this form. So it is in its essentials negatively characterized. Genuine epilepsy depending upon congenital, inherited or early acquired basis (early epilepsy), occurs mostly in youth, is manifested by typical attacks, *petit mal*, dream and confused states, progressing to a lasting change of the psychical personality (epileptic-psychopathic constitution, epileptic dementia, etc.). A near relation exists between it and epilepsy occurring on an organic basis. In children focal affections lead to that single condition in which idiocy, paralysis and epilepsy occur in the most various combinations. Epilepsy which first appears as an accompaniment or symptom can after the disappearance of the acute symptoms become habitual; it can however from the first and during the picture fully govern, so that an apparently genuine epilepsy as a disease picture results. As the cases of Sachs and Peterson, Rosenberg, Osler, Goodhart, many examples of Bourneville, show there are here numerous possibilities, by which an idiopathic epilepsy may be masked. These cases, the so-called cerebral infantile palsies without paralysis, have led Marie to the conclusion to which Freud, Sachs and others have added, that all cases of clear, genuine epilepsy go back to affections of a focal character. Here erroneous generalizations prove the case for a group of quite special cases of apparently genuine epilepsy. From this direction genuine epilepsy is in no danger of being disintegrated.

More important are the cases of clearly genuine epilepsy which appear to show that epilepsy quite generally possesses the character of an "organic" disease. Best known in this territory are the cases of pseudo-Jacksonian epilepsy, the numerous observations of Féré's, the aura symptom with focal character, etc., while first Heilbronner and shortly after also Redlich pointed out, that it was not the attacks but the intervals between the attacks that throw light on the situation. These are the exhaustion phenomena, pareses, aphasic disturbances (Oppenheim, Heilbronner, Raecke, Bernhard, etc.), already formerly known. The attack: The motor cortex is always the place through which the existing irritation in the form of generalized convulsions unloads itself, we can then assume the seat of the disease within the motor cortex, if paresis remains after the attack (Redlich, Voisin), while we speak of an extramotor seat

of the attacks, if with light attacks there appears a severe progressive dementia in which the intelligence is affected preponderantly by important sensory centers. Here the general disease of the cortex, coupled with a special intensity in circumscribed spots (Alzheimer, Weber, Bleuler) becomes also clinically clear. Another territory that more justly is included in the domain of genuine epilepsy is that of the functional neuroses, especially hysteria. More difficult than the cases, where in course of time hysteria approaches or turns into epilepsy (Bratz and Falkenberg), are the cases in which (Binswanger, Nonne) from the beginning there persists an intimate combination of symptoms. These cases should not be considered here in the domain of clear, uncomplicated epilepsy but be segregated, separated from them. A discussion of the disputed territory of hystero-epilepsy does not come within the purpose of the author. Since Hoche's exposition of 1902 which expresses the present day condition of our knowledge of the subject, nothing new has been added that has made possible a more profound understanding of it.

Only the group of *accumulated small attacks* of Hoche and Heilbrunner (a part of these cases have been reported by Gélineau, Freidmann) must be mentioned. The understanding of the nature of the attack is often very difficult, and also the course, which may decide between epilepsy and hysteria, gives no certain sign, that the case will either lead quickly to death or recovery, or may pass over into true epilepsy. Also the cases without hysterical indications are to be separated from true epilepsy. It represents a special group.

*Degenerative Epilepsy.*—Through Binswanger we have learned to distinguish between simple and degenerative inheritance; Cramer has placed the rôle of the endogenous as a foundation for nervousness in the right light. It is shown that degeneration is not only a direct cause of epilepsy but that also it can give a special coloring to indirectly produced diseases. The judgment rests fundamentally on three things: heredity, accumulated corporeal signs of degeneration, and psychical stigmata of degeneration. Not infrequently epilepsy is combined with congenital intellectual weakness of different grades, from simple defectiveness to idiocy, often however the degenerative element appears in disequilibrium from time to time and we are brought to the great domain difficult to define of the superior degenerate with isolated epileptic attacks up to outspoken epileptics with clear signs of degeneration.

There is now a special group of genuine epilepsy briefly to be defined—the *affect epilepsy* of Bratz and Leubuscher. The type can best be designated by the term used by the authors themselves; *affect epileptic convulsions in degenerates*. The disease picture stands in the same relative position between epilepsy and psychic degeneration as the *psychasthenic convulsions* of Oppenheim do between epilepsy and neurasthenia. Still to be pointed out are the Westphal cases, the relation of epilepsy to migraine (Binswanger, Kowalewsky, etc.), to myoclonia (Unverricht, Verga). In these cases occurs mostly a combination of different disease conditions, their differentiation is practically often very difficult and indeed in many cases a matter of personal taste.

The former grouping is at the same time a defining, if one seeks within the genuine epilepsy to separate special groups, quite other difficulties appear. As to forms such as *E. rotatoria*, *retropulsiva*, etc., these refer only to some especial way of manifestation or a special symptom grouping in the course of the attack, etc., and as to otherwise identical disease pictures as *E. menstrualis*, *lactation E.*, etc., in which a physio-

logical process sets loose the disease and the attack appears. Also with the etiological consideration no essentially new forms will be acquired for Féré's etiological classification will go out of use because it is not at the same time an etiologic-clinical classification.

(1) *The Epilepsy Ex. Eclampsia*, which according to Heubner, Henoch, Lange and other capable observers actually exists, must after the new exact individualistic researches of Thiemich be set aside, for from these the facts already expressed by Binswanger proceed, that the cases develop on a neuropathic foundation, that the eclampsia is the expression not the cause of the disease, that then the epilepsy grows from the same soil. (2) *Reflex Epilepsy*: Here the temporal relations of the attacks will show the way to differentiate them from those of genuine epilepsy loosed by a peripheral irritation and from those convulsions with epileptogenic zones which are always strongly suspicious of hysteria. (3) *Metabolic Epilepsy* (toxemic E.): We know the genesis of these cases better since Krainsky, Fröhner and Hoppe have been able to show, that only in a specially small number of cases does deficient nitrogen excretion produce an increased number of attacks, while Alt and Hoppe showed that not all, indeed only a part, of the epileptics had disorders of metabolism. It follows from the observations of Weber and others that the cases of so-called *gastric epilepsy* always occur in patients neuropathic by nature with severe taint and psychic anomalies and the first attack occurs associated with symptoms of intestinal disease; they are clearly cases of genuine (early) epilepsy, as it also proceeds out of anatomical conditions. The foundations exist previously, the dietetic treatment is (in spite of its great practical importance) symptomatic and not specific.

With this we may abandon the domain of early epilepsy, it commends itself alone for transient consideration only, the whole special explanation of epilepsy already given has still more promise, if the attention will be much more than formerly directed towards the territory of the relation between epilepsy and idiocy. Isolated attacks may occur in all idiots, symptomatically they show the picture of true epilepsy with different forms of idiocy; for example, amaurotic family idiocy, metabolic idiocy, etc.; then with the organic forms: the following combinations merit special consideration, which, however, do not make possible a unifying systematization of this still little known territory. Many cases are specially difficult cases of clearly genuine, others of degenerative epilepsy. One sees especially difficult and characteristic forms of idiocy and epilepsy develop on the basis of hereditary syphilis (the cases of Bechterew). The forms of idiocy resulting from localized disease occupy a special position, infantile cerebral palsy and epilepsy in the most various combinations of this symptom-complex (see above). The hydrocephalic is another form that may be mentioned, not cases of high grade hydrocephalus externus with increased size of skull, but cases in which the disease occurs as hydrocephalus internus. The skull is normal or smaller in size, it occurs on a congenital basis, slowly progresses, and proceeds clinically by pronounced steps. Further, epilepsy approaches cases of idiocy from severe developmental disturbance, for example, microcephaly; there are also cases which have their foundation in defect of development, namely, in the defect of late organo-genetic differentiation; these belong, with the exception of some cases very difficult to understand, especially a particular group, which, since Bourneville, Bonome, and before all Pellizi is better known, the tuberosc sclerosis, which is better defined anatomically than clinically, the defect of development comes out, however, in the symptoms.

Late epilepsy leads to the etiologico-clinical consideration of a series of disease pictures differing among themselves which, however, all clearly possess the character of late epilepsy. These must be differentiated: the intoxication form, the arterio-sclerotic late epilepsy, the traumatic, and syphilitic forms.

Among the *intoxication epilepsies* the cases brought about by lead and alcohol demand special consideration. The cases caused by intoxication show commonly an outspoken delirious character in general in their clinical course, and especially in alcoholic epilepsy it shows itself through its near relations and often occurs in combination with delirium tremens (Moeli, Siemerling, Bonhoeffer, Krukenberg). In *lead epilepsy* the nature of the convulsions (already Jolly differentiated the symptomatic and intoxication E.) is often difficult to define, as they (Westphal) may be conditioned by the vascular disease, or be of an uremic nature, or the clear expression of the effect of the poison on the brain. Pure lead epilepsy shows few attacks, which are severe, high grade states of confusion, severe dream deliria. In *alcohol epilepsy* the time of the outbreak of the disease is shown (in the second or third decennium) on which von Hebold and Wartmann lay so much stress, that besides with alcohol the neuropathic constitution comes under consideration as a causative factor. (M. Huss, Moeli, Binswanger, Salgó). Quite correctly Bratz has distinguished in partial conjunction with Drouet, Jolly and Newmann (Kraepelin agrees with him) two forms: (1) *Alcoholic epilepsy*, which through the disappearance of the attacks during abstinence, through the failure of a typical deterioration, through its relation to delirium tremens, comes nearer an acute psychosis on an alcoholic basis. (2) The *habitual epilepsy of the drinker*, which through the continuation of the attacks during abstinence, through the typical periodic moods, through its progressive course, through its relation to chronic psychoses demonstrates itself as a pure epilepsy.

*Arterio-sclerotic epilepsy* embraces a part, not as Lüth means, of the whole field of late epilepsy. Clinically in a part of the cases described by Alzheimer and Windscheid there were symptoms of cerebral arterio-sclerosis besides typical epileptic attacks, they are not seldom complicated by focal symptoms and a differential diagnosis from all sides (Binswanger, Vorkastner) offers difficulties. In one other group of cases the psychical symptoms, dream states and periodic vertigo (attacks are rare) appear more in the foreground. This is the *cardio-vascular epilepsy of Schupfer*, which probably is due to disease of the great vessels, not reflex from the heart, like a true cardiac epilepsy (Stinzing, Binswanger, Redlich, etc.).

The cases of traumatic epilepsy have symptomatic relationship to those which are produced by disturbances of the central innervation processes (traumatic neuritis), as for example in the mixed anesthesias that show. In spite of difference of the traumas all cases (Siemerling) of traumatic epilepsy show an inner relationship; brusque beginning, typical attack and strong tendency to severe psychic disturbances (Wagner, Hay).

Epilepsy after syphilis can possess the most varied, often difficult to circumscribe genesis: symptomatic, as single signs with disease of the vessels and as a clear post-infectious disease. The *parasyphilitic epilepsy of Fournier* belonging to the latter form is mostly a clearly genuine epilepsy which is brought to the surface by a syphilitic infection. On the contrary there is in connection with hereditary and acquired syphilis an epilepsy as a clear post-infectious neurosis, the post-syphilitic epilepsy (analogue of tabes), as it is described for the acquired syphilis of Nonne.

As to genuine epilepsy the grouping is at once limited, and further the clinical observations will yet be able to separate out many groups from this territory, whereby the idea of genuine epilepsy will suffer more and more contraction but lead thereby to a more precise description rather than theorizing. For the study of epilepsy in the future the clinical territory of cases of idiocy and epilepsy will prove fruitful. Within late epilepsy there is a series of etiological-clinical disease pictures. These contain in the meanwhile only a part, by no means, however, all forms in late epilepsy. Epilepsy is not a disease but a disease group.

WHITE.

### Zentralblatt für Nervenheilkunde und Psychiatrie

(Vol. XXXI. May 15, 1908)

#### *The Forensic Significance of Psychogenic States and Their Separation from Hysteria.* RISCH.

Risch recognizes three forms of psychogenic states as they occur during early improvement: (1) Stuporous states accompanied by active psychomotor excitement with violent behavior or without either of these acute conditions; (2) Disease pictures in which anxiety, depression and agitation are in foreground while retardation is not prominent; (3) Delirious states of long duration.

The delirious disturbance of consciousness is rarer than the other forms, and is differentiated from hysterical pictures by (a) its favorable course, (b) absence of analgesia and Ganser's symptom complex and (c) absence of hysterical character degeneration. The patients are completely confused; they imagine they are making expeditions and journeys; they sing, whistle, command in a loud tone of voice, curse, destroy furniture and clothes and pass sleepless nights. Hallucinations are not certain. Not infrequently after the administration of a hypnotic patients fall asleep, and on awakening they are free from their delirium. Then they appear quiet, oriented, do not speak spontaneously, and answer questions correctly. For weeks they are mentally and volitionally retarded and these are characteristic stigmata of such a reaction peculiar to a psychogenic shock. Several cases are described to illustrate the differentiation between psychogenic states and hysterical conditions. This separation is of paramount importance from a forensic point of view inasmuch as Sec. 51 (a criminal act is not punishable when it is committed at the time of unconsciousness or morbid disturbance of mental activity) is not applicable in psychogenic states. Hence simulations are not frequent and moreover they are of no help to the malingerer.

(June 1, 1908)

#### *Rapid Alteration of Expansive and Depressive States in a Case of Progressive Paralysis.*—MORAVCSK.

Moravcsk reports a case of general paralysis which on admission presented grandiose ideas with exaltation. Six months later the patient suddenly showed a striking change in her mood, for two days she was depressed, cried, assaulted herself, answered reluctantly, and complained of not being able to speak or walk. She stated that she had no heart or stomach and that she would never see her relatives. On the next morning she became elated, happy, spoke of having millions, that the whole world belonged to her, and uttered similar grandiose expressions. The

temperature showed no marked variations; pulse was more frequent in depression (100-110); respiration varied between 20 and 28 per minute; in expansive state blood pressure altered from 40-80; in depression from 80-110. The author holds that vasomotor disturbances played an essential rôle in production of variability of mood in this case.

(June 15, 1908)

*Apropos of the Structure and Clinical Position of Melancholia Agitata.*  
SPECHT.

Specht offers a long and exhaustive treatise on melancholia agitata. He criticizes the various views on the subject and particularly those of Wernicke, Kroeplin, Westphal and others, and maintains that melancholia agitata should be regarded as a mixed form of manic depressive insanity. His article contains many subtle and hypothetical theories, but not a single case was published in order to prove his thesis. Is it not utterly preposterous in the present state of our knowledge of psychiatry to resort to abstract and fruitless contemplations, instead of carefully recording such clinical phenomena as present themselves in the evolution of the disease?

(July 1, 1908)

*The End Stages in Dementia Præcox.* JAHRMÄRKER.

Jahrmärker discusses the early symptoms of dementia præcox. He holds with Bleuler that schizophrenia is a more appropriate name than dementia præcox. This disease is governed by two important factors: (1) Factors external to the disease, such as age, predisposition, alcohol, infection, exhaustion, etc.; (2) features common to the alteration of the central nervous system and the peculiarity of the disease process. The primary symptoms result from the disease itself, and secondary symptoms are governed by the complex. It is impossible to differentiate groups according to degree of dementia. All stages of dementia præcox may take an acute, chronic course or manifest further development. The prognosis of dementia præcox is not the enfeeblement but what direction the course of the disease takes to a certain state of dementia. A serviceable measure for deterioration does not exist.

(July 15, 1908)

*The Psychosexual Differences Between Hysteria and Dementia Præcox.*  
KARL ABRAHAM.

Abraham contributes a very instructive paper on dementia præcox based on the Freud school, which indeed, is worthy of careful consideration. Psycho-analytic method has done a great deal towards our knowledge of the mechanism of hysteria and dementia præcox. In both of these conditions the main symptoms originate from suppressed sexual complexes. In dementia præcox the object love and "sublimation" (an application of sexual motive power for a non sexual end) are abolished. Hence autoeroticism is the very foundation in dementia præcox, while such is not the case in hysteria. Delusions of persecutions, and ideas of grandeur are products of autoeroticism. The psychosexual characteristics of a dementia præcox constitution can be recognized in early childhood, by the psychotic traits which on examination will show a definite autoerotic coloring. Autoeroticism should not be taken in its narrow sense, but we must consider its various equivalents which Freud so admirably described in his monograph, "Drei Abhandlungen zur sexual Theorie."

(August 1, 1908)

*Brain Inhibition as a Protective Measure of the Central Nervous System.* RISCH.

In several former communications, Risch discussed the clinical picture, nature of trauma, etc., of and in psychogenic states, and in this paper he offers a theoretical explanation of its mechanism. His conclusions are highly hypothetical and may be summed up as follows: (1) The psychogenic state is an abnormal reaction of cerebral cells towards a stimulus of intensity which on account of its chemical and physical nature cannot be tolerated. (2) The cells of the stimulated stream consist of fluctuating small parts of matter resembling electrical discharge. (3) The stimulus wave travels through the ganglion cells on a reflex tract to the vasomotor system. (4) Vascular constriction leads to insufficient supply of oxygen in the ganglion cells due to intense stimulation. (5) A chemical alteration occurs in the cell bodies, through which the same become isolators. (6) Inhibition of thought is a paralysis of cells and is ascribed to inability to convey impulses in the conducting cells. (7) Stimuli of moderate intensity do not travel through the reflex arc to the vascular system, while the poorly conducting cells in the reflex tract are intercalated which act as current breakers. (8) The vasomotor system acts, in states of thought inhibition, as brake apparatus. (9) This automatic functional brake apparatus which leads to inhibition of thought protects the nerve cells through the abnormally high stimulation. (10) The development of inhibition as a result of powerful stimulus leads to breaking up of current in reflex tract. (11) The dilatation of cerebral vessels regulates the normal metabolism in the cells and in consequence the power of absorption is regained. (12) When from various grounds no reflexed inhibitory association states come, then inhibition of thought makes its appearance. (13) Through inhibition of thought the ganglion cells protect themselves from intense and injurious stimulus. It appears that inhibition of thought is a protective measure of the central nervous system.

(August 15, 1908)

*About the Future Development of the Custodial Insane Asylum in Bavaria.* REHM.

In this long article Rehm discusses the care of the insane in Bavaria, and proposes a few reforms, which may be outlined as follows: Cities with a population of 40,000, should have psychiatric wards in general hospitals for temporary treatment and detention of the insane. Idiots and epileptics are to receive medical attendance, and wards for them should be created in the insane asylums. A school for abnormal children is necessary, and a competent physician with psychiatric training should be connected with it. A juvenile who commits a crime, should, before facing justice, be examined and observed by a psychiatrist. Special wards for the treatment of alcoholics are of the utmost importance and they should be associated with the insane asylums. Hospitals for nervous diseases are desirable. Criminal insane, insane criminal, and criminal feeble minded are to be separated from the general insane. In order to reduce the cost of maintenance of the asylum, family care should be encouraged; this could be accomplished in two-fold manner: (1) in relation to the asylum and (2) founding of special centers. Most of the patients could be boarded very cheaply in all districts. Societies to aid discharge patients should be organized.



(September 1, 1908)

*Apropos of Transitional Delusional Stages on Degenerative Basis.*  
BIRNBAUM.

Birnbaum describes a peculiar form of a psychosis which occurs in individuals in whom stigmata of degeneration are in prominence. The delusions are of two kinds: (1) A feeling that injurious influences are exerted on him by an enemy and (2) fantastic grandiose ideas with absurd confabulation. They may be hypochondriacal, mystic, paranoid or grandiose. Illusions of fantastic and delirious nature, together with hallucinations, not necessarily persecutory but rather absurd, are manifested. This symptomatic picture differs from paranoia in that the onset is acute and is very often accompanied by disturbance of consciousness of a hysterical nature. The delusions are neither systematized nor progressive; quite frequently they are non-productive. At times however new ideas are formed which are reactionary to external causes. The disappearance of the delusions may be sudden or gradual with fluctuations. Not infrequently patients are unable to recall the various phases of the malady and especially for the period restricted to the confusion. The course of the psychosis is regular and may have remission or intermission. The duration varies from weeks to months and in some cases it may be exceptionally long. The psychosis may culminate in complete recovery with good insight or with some defect. This peculiar mental reaction is in relation to certain external causes, such as arrest, confinement, conviction, etc. Favorable conditions (gain of liberty, suspension, leave of absence, etc.) may produce good or bad effects on the disease process.

The author discusses the mechanism of the delusions and regards them as self-influenced (in the sense of wish gratification) and as determined by external factors. Although this clinical picture presents many hysterogenic features, yet he wishes to classify it independently as degenerative delusional states.

(September 15, 1908)

1. Apraxic Agraphia in a Right-sided Brain. S. MEYER.
2. The Etiology of Twilight of Consciousness. Vosz.

*Apraxic Agraphia.*—Meyer's patient (46 years of age) had an attack of apoplexy. With the subsidence of the acute symptoms, paresis of the left upper extremity with complete sensory involvement save pain sense was demonstrated. Ill-defined sensory symptoms were present in the left side of face and lower extremity. Pupils were small, unequal, and reacted sluggishly to light. Speech was fairly good; he apparently understood what was said to him and only occasionally had to think over a word and answer a question in a broken sentence. He seemed fatigued and his intelligence was affected. In reading he omitted words and did not take the trouble to correct himself. He was not left-handed. He was able to write the alphabet and ciphered correctly and legibly. However combination of letters made no sense and he could not form words properly from dictation or transcript. In other words definite agraphia was in evidence. After the lapse of several months he regained power in the left hand and then he was able to write with it correctly but could not do so with the right one. The author insists on classifying this case as motor apraxic agraphia and ascribes the lesion to that portion of the corpus callosum which is in close relation with the central convolution and adjacent structures—impairment of the conducting path.

Vosz declares that twilight of consciousness usually develops on hysteroid, epileptoid and neurasthenoid bases. He reports two cases in which twilight of consciousness was a prominent symptom; in both of them chronic alcoholism was a paramount etiological factor. Such a clinical picture of an alcoholic genesis is extremely rare and therefore in his cases he regards this peculiar reaction as an equivalent for delirium tremens.

(October 1, 1908)

1. The Relation Between Impulsive Neurosis and Katatonia. OSCAR KOHNSTAM.
2. Hospital Treatment for Nervous Diseases. ERNST BEYER.

Neither of these two articles contains any interesting material for review.

(October 15, 1908)

*The Question of Degeneration.* EMIL KRAEPELIN.

Kraepelin emphasizes the fact that alcohol, syphilis, abnormal relation between man and nature and "domestication" play important roles in the production of degeneration. According to various statistics, insanity is on the increase in civilized communities. Alcoholic psychoses and paresis are extremely rare in Java and among the Russians and Baskirs in Ufa. For the past forty years insanity in the negro has increased three-fold. Alcoholic psychoses and paresis occur in them relatively more frequently than in the white races. It is to be remembered that alcohol and lues are causes for arterio-sclerosis. The latter also enters as an important etiological factor in certain forms of mental diseases which are quite prevalent in large cities. For the last decade morphine and cocaine have contributed their share in the causation of insanity. Alcohol and syphilis exert a harmful influence on the reproductive organs; the feeble minded, epileptic, psychopathic, criminal, prostitute and vagrant originate from alcoholic and luetic parents.

Aside from these toxic causes, there are other conditions which are responsible for degeneration, viz., abnormal relation between nature and man and "domestication;" the latter also estranges our relation with nature. Mutual cooperative communities make a man helpless, dependent and "secularization" ensues. Concentration of people in large cities and their deprivation of light, fresh air and regular mode of living are beyond doubt detrimental. The denial of self preservation—a characteristic feature of the civilized man—is evidenced by the frequency of suicides. In general we take little care of our own bodies. We eat without being hungry, and often resort to hypnotics in order to obtain a night's repose. To be sure disturbances of sleep and defective appetite are the usual manifestations of a psychopathic constitution. Impulsive psychoses and neuroses, phobias and ideas of self reproach are peculiar to the civilized. The avoidance of marriage, weakening of reproductive organs and encouragement of race suicide are also common in civilized societies. All these causes, which are the product of our civilization, react not only on one individual class but on the entire race. A plea for better and more accurate statistical data is made.

(November 1, 1908)

*Apropos of Cortical Measurements.* K. BRODMANN.

Brodmann concludes that the width of the human cortex varies greatly under physiological conditions between 1.5 mm. and 4.5 mm. from the summit of the convolution.

(November 15, 1908)

*Apropos of the Clinical Cardinal Question of Paranoia.* GUSTAV SPECHT.

In this paper Specht offers a long discussion on paranoia, and reminds the reader of his former communication in which he advanced the idea that chronic mania culminates in paranoia. Pathologic affect is indispensable for a paranoid delusion. His experience in the clinical observations and psychological analysis of cases convinced him that paranoia is a peculiar manifestation of manic depressive insanity. Moreover he maintains that querulous paranoia should be termed querulous mania. He cites no cases to prove his thesis; his theory is only hypothetical and is of relatively little value.

(December 1, 1908)

1. An Alleged Case of Delirium Tremens Due to Withdrawal of Alcohol. K. GRAETER.

2. Apropos of Naming Dementia Præcox. G. WOLF.

1. *Delirium Tremens Due to Withdrawal of Alcohol.*—Graeter particularly refers to the case of delirium tremens, caused by withdrawal of alcohol, which was reported by Hans Hesch in *Münch. Med. W'och.*, 1907. He questions the diagnosis of that case and declares that the clinical picture of delirium tremens was exceedingly ill-defined. The patient was tubercular and had convulsions at the onset of the psychosis. The differential diagnosis was not discussed. Graeter maintains that delirium tremens does not develop on the withdrawal of alcohol in absence of other complicated causes.

2. *Dementia Præcox.*—Wolf is of the opinion that dementia præcox is a misnomer because this disease occurs in all ages and deterioration cannot be demonstrated in every case. Therefore, he proposes that the name of dysphrenia and catatonic, hebephrenic and paranoid, should be suffixed to it.

(December 15, 1908)

1. The Method of Demonstrating Sejunction Process in Functional Psychoses. M. ROSENFELD.

2. Dementia Paralytica Among Egyptians. G. HEIM.

*Sejunction Process.*—The demonstration of sejunction process in chronic, stationary and residual forms of psychosis is rather easy. However, in acute states of mental diseases in which various grades of negativism, mutism and other motor condition are found, the presence of sejunction process is extremely difficult to ascertain. In cases where the usual coöperation and accessibility are lacking, the author adopts the following methods: (1) The examiner strikes a glass with a metal rod rhythmically; the patient is asked to imitate this and especially reproduce the same rhythm. (2) A vibrating tuning fork of different intensity is held in front of the patient's ear and he is requested to indicate the character of the tone of these vibrations by saying "bright," "dark" and

"fine." (3) Various smelling solutions are given to the patient and he is asked to tell which has a bad or a good odor. In patients who are mute, the facial expressions and general affect should be carefully observed. For this purpose two patients were selected. In both of them the psychosis was of fourteen days duration. In the first diagnosis of hebephrenia was made, although hallucinatory irritability or alcoholic delirium was considered. In the second manic depressive insanity and a hysterical reaction was suggested. In each of them motor disturbances were pronounced. When the first patient was requested to strike the glass with a metal rod on imitation, she did it clumsily and wrongly without any rhythm and manifested no affect whatever. The second patient was at first playful, but soon carried out this experiment correctly and with proper affect. The other tests gave similar results.

When patients in performing these tests show a deficiency of emotional response and inability of correct mimicry, then sejunction process is in evidence. By these methods early stages of deterioration in acute form of a functional psychosis can be recognized.

2. *Dementia Paralytica Among Egyptians*.—Heim declares that statistically general paralysis is rare among the Egyptians. Syphilis is of frequent occurrence in Egypt, but it runs a milder course, tertian manifestations are relatively rare, and beyond doubt the dry, warm and sunny climate exerts a favorable influence on the progress of the disease. It is also of interest to note that there luetic brain affections yield more readily to specific treatment than in Europe. The author asks the question—would mercury therapy produce a beneficial effect on tabes and paralysis in Egypt?

M. J. KARPAS (Ward's Island, N. Y.).

## Revue de Psychiatrie et de Psychologie Expérimentale

(June, 1908)

1. Epilepsy in Dementia Præcox. L. MARCHAND.
2. The Procedure to Reorganize the Mental Synthesis in the Treatment of the Neuroses. Dr. BEZZOLA.

1. *Epilepsy in Dementia Præcox*.—The author concludes: Epilepsy may be observed in the course of dementia præcox as it may be observed in the course of other psychoses. Epileptic attacks in the course of dementia præcox are rare. They may be one of the first symptoms of the mental malady. They occur especially in the hebephrenic and catatonic forms. The attack may present the classical characters of an epileptic attack; in certain cases they are atypical. The diagnosis of dementia præcox complicated with epilepsy from epileptic dementia may present some difficulty, especially when the attacks are frequent and appear from the commencement of dementia præcox. The anatomico-pathological researches show that the mental disturbances, on the one side, and the convulsive attacks, on the other, ought to be considered as symptomatic of the same cerebral lesions which consist most often of a superficial diffuse sclerosis.

2. *Mental Synthesis in the Treatment of Neuroses*.—The author deals with the neuroses from the point of view of the traumatic neuroses. Here the cause has been an external one, the situation is capable of easy analysis and much light can be gained by the evidence of witnesses and

an examination of the surroundings. The neurosis is the result of the sudden interruption of a mental state in process of synthesis and the symptoms are nothing more than the cerebral reactions fixed at their birth. The cure is effected by completing the synthesis, by any means whatever, when the symptoms disappear. This completing of the synthesis is brought about either by recreating the event as fully as possible by suggestion or by aggravating the symptoms.

The recreating of the event is done by placing the patient in hypnosis and by assistance building up all the details, thus permitting a full expression of the emotions. The cure by aggravating the symptoms is illustrated by the case of a woman who was suddenly awakened by her husband having an apoplectic seizure. The image of her dead husband was thereafter always before her eyes. The more sleep was suggested to her the more agitated and fearful she became, so it was decided to develop fully this terrifying scene. This was done. She reviewed the scene fully was moved to strong emotional expression, cried bitterly and then slept for the first time. From this she improved steadily until quite well.

This is really the so-called cathartic method of treatment but it is accomplished without any previous analysis, without the aid of the psycho-analytic method of Freud which the author thinks unnecessary. The important thing is to cause a full expression of the symptoms of the patient in order to bring about a synthesis and not to try to repress these by narcotics or counter suggestion. This full expression brings about a reconstruction which alone can make the symptoms disappear. The tendency of the patient to reproduce the events and to talk of them is an expression of a subconscious effort making for cure.

When the normal synthesis is interrupted by emotional influences the curative synthesis completes it and cures the results of the interruption. The dream process is the same, it is at bottom another method of spontaneous curative synthesis. Are not mental diseases imperfect syntheses seeking to realize themselves? It is certain that psychology alone can offer the basis for the future treatment of the *vesanias*.

## Book Reviews

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INTERNATIONAL CLINICS. Volume III, 18th Series. Pp. 298. J. B. Lippincott & Co, Philadelphia and London. 1908.

This volume is of special interest to the readers of this JOURNAL because of several articles it contains in the realms of neurology and psychiatry.

There is a short and wholly orthodox article on the nature and treatment of sciatica by Sir Dyce Duckworth. He merely emphasizes the fact that sciatica is invariably dependent upon a neuritis, and that the main features of treatment are rest and warmth.

An article by Dr. G. W. Walton on "The Estimation of So-Called Functional Nervous Symptoms," sounds a note of warning because of the tendency to make hasty favorable prognoses in cases that evince symptoms that are seemingly functional in origin. He cites several cases, among which cases of early *myasthenia gravis* are the most noteworthy. These are not infrequently mistaken for hysteria, a very unfortunate error, especially when the case results fatally.

In the field of psychiatry Professor Jastrow writes in his usual facile and entertaining style "On the Trail of the Subconscious." The article contains little that is new, but is replete, as is usual in his writings, with interesting illustrations. The main portion of his paper, however, deals with a somewhat threadbare theme, namely, the splitting up of the personality in the well-known cases of Mlle. Hélène Smith, Miss Beauchamp and Mr. Hanna. Dr. Jelliffe gives a clinical paper on "General Paresis," giving the records of four cases. Aside from the interesting historical introduction, which is especially well conceived, the paper is particularly valuable for the most admirable summary of the pathological changes in this disease, following the work of Alzheimer.

Finally, the paper by Dr. Williams on "Considerations as to the Nature of Hysteria, with Their Applications to the Treatment of a Case," deserves notice. The special value of this paper is the breadth of access which it gives to the current French literature on the subject. The author takes the position of Babinski as regards the nature of hysterical symptoms and concludes "That all the symptoms which may legitimately be included under hysteria are imposed by suggestion." This view is well-known and has much to be said in its behalf. It is not altogether clear, however, how the author reaches the conclusion that it necessarily involves the rejection of the dissociation theory as explanatory of the symptoms. The dissociationist would at once reply that suggestion, the nature of which it must be remembered that Babinski does not touch upon, is but the means of bringing about dissociation—the end. Whatever may be said regarding the tenability of the dissociation hypothesis, it must be conceded that the great advances that in recent years have been made in our knowledge of hysteria, have been brought about under its domination and that in its modern German garb, as the theory of the "complex," it has added still further to our knowledge, not only of functional conditions but of many of the hitherto inexplicable manifestations of the psychoses.

WHITE.

DISEASES OF THE SPINAL CORD. By R. T. Williamson, M.D. (Lond.), F.R.C.P., Henry Frowde, Oxford University Press; Hodder & Stoughton, London. 1908.

The author is a teacher. His book states the generally accepted teachings on spinal cord conditions in a clear form, well suited to accomplish what the book aims to do—introduce students and practitioners to the best teachings of modern neurologists upon the subject. It possesses decided merit in two general features. The clinical experience of the writer enables him to cite examples constantly from his own cases, thus giving the reader confidence as to the value of opinions expressed; while years of effort in presenting the same subjects to students have given him didactic effectiveness of expression and felicity, both as to the matter included and the matter omitted.

Dr. Williamson was Registrar at the Manchester Royal Infirmary for ten years, and later assistant physician; and has been lecturer in medicine, Victoria University, Manchester, for fifteen years.

The matter of the book is arranged with a view to helping the clinical observer to a proper diagnosis, most of the diseases discussed being grouped under four main heads: Diseases giving symptoms of a transverse lesion of the cord, those causing atrophic paralysis, a group giving spastic paralysis, and diseases in which ataxia is a prominent symptom. The last three chapters are, however, based upon pathological criteria, and discuss respectively diseases accompanied by meningitis, those produced by syphilis, and the traumatic affections of the cord. Instructive opening chapters deal with anatomic and physiologic considerations. An appendix sets forth succinctly the methods preferred by the author for preserving and preparing tissue for examination. His modification of the Bielschowsky formol-silver method has the advantage of being applicable to celloidin sections. Judging by photographs presented of the author's own sections, the method is an unqualified success. The paragraphs on treatment are terse and practical. Tiresome catalogues of merely classical procedures are omitted; and in cases where the author knows of no remedy, the fact is frankly stated, yet without affectation of therapeutic nihilism.

In typography and finish the book is well executed. Nearly 200 illustrations elucidate the text, most of them being either microphotographs of the author's own sections, photographs of his cases or well designed diagrams.

Throughout, this book is marked by conversatism, cautious reasoning, good judgment and a refreshing freedom from obtrusive egotism.

A. H. WOODS.

INJURIES OF NERVES AND THEIR TREATMENT. By James Sherren, F.R.C.S. Pp. 310. Wm. Wood & Co., New York. 1908.

It is refreshing to find in a work dealing with the general subject of nerve injuries, a full recognition of recent advances that have been made in our knowledge of sensation. This work, which has largely been the result of researches by Head, to be sure, has already been recognized in some of our text books, but it has only crept in in the last editions in a parenthetical sort of way as an afterthought, as it were, and has not materially modified the treatment of the subject. Sherren, being fully familiar with the work, having previously published much of the material of this book in conjunction with Dr. Head, has adopted his recent work

fully, and all of the methods of examination are based upon it. It is eminently fitting that the author should have dedicated his work to Head.

The plan of the work is simple and comprehensive. In the first chapters the author deals with the general questions of classification, terminology, methods of examination, differential diagnoses, surgical treatment, and the problems that surround the question of nerve regeneration. From this point he takes up the questions of the individual nerves, beginning with the cranial, and discusses *seriatim* the peripheral nerves including the sympathetic, the cauda equina, and taking up also injuries to the large plexuses. The treatment that these subjects receive is admirable, the book is written in plain, understandable English, and the plates, although perhaps not works of art, are fully illustrative of the points the author makes. He shows also an excellent appreciation of all recent advances in this field, and notes particularly the good work that has been done by Cushing, of Baltimore.

A significant statement as regards the time of examination is the following: "But in a large number of the cases that are seen soon after the accident, the nerve is injured as the result of an incised wound in the region of the wrist, and it cannot be too strongly insisted upon that a thorough examination of the parts below the wound should be carried out on the lines laid down, before any attempt is made to deal with the wound or divided structures under an anesthetic. . . . Before considering a lengthy operation upon recently divided nerves and tendons, it is well to know what structures are divided, and not to trust to a chance discovery to enable the correct structures to be found and sutured." This is unquestionably good doctrine, but inasmuch as these wounds in the neighborhood of the wrist are frequently accompanied by injuries to the larger vessels, it is rather difficult to see how any such examination could be systematically carried out.

The whole work cannot be spoken of too highly. It is invaluable, not only to the neurologist, but to the surgeon.

WHITE.

MENTAL DEFICIENCY. By A. F. Tredgold. New York, Wm. Wood & Co., 1908. Pp. xviii + 391.

A work on this subject is especially welcome, as but very few books treating of mental deficiency have appeared in English in recent years, Dr. Ireland's work still holding its own as the authoritative English book, while Dr. Barr's, recently published, is about the only comprehensive work that covers the same field in this country.

The work of Dr. Tredgold has some interesting features. In the early chapters his analysis of results of the investigations of the Royal Commission in 1904 are especially interesting. As a result of this analysis he comes to the conclusion that there is one ament to every 248 of the population in England and Wales, while the proportion of the insane is somewhat less, being only one to 273, giving a total of one to 130 of all mental disorders. These figures are certainly striking and ought to give us some sort of comprehension of the importance of the subject.

The general description of the different varieties of mental deficiency, which by the way the author always speaks of as *amentia*, is orthodox, and contains very little that is noteworthy. Numerous cases are quoted, in fact, a considerable bulk of the book is made up of case records, illustrating the special types. The pathology of the subject is dealt with to



some extent, although it is noticeable that the work of the last four or five years does not receive much notice. Bolton's histological studies are spoken of most highly and he is quoted in explanation of the general condition. In the classification of the different divisions of the mind the author speaks rather strangely of the sensory, mental and motor, as if sensory and motor were not mental processes. On page 109 in dealing with the temperament, he reverts to the Aristotelian classification of the choleric, the sanguine, the phlegmatic and the melancholic. This is rather an anachronism, to say the least, and is quite unnecessary, as a great deal of work has been done in the past few years in defining and describing types of character.

In the statistical study of mental deficiency it is interesting to note that the proportion of females to males is six to five; and that there are 8 per cent. of insane among aments as against three-tenths of 1 per cent. in the general population, while the general conclusion seems to be warranted that the expectancy of life in this class of patients is much reduced, the most potent direct cause of death being tuberculosis, which is responsible for 39.6 per cent. The author also believes that the expectancy of life is reduced in direct relation to the degree of mental deficiency. A chapter is devoted to insanity in defectives, and the subject of treatment, especially by educational methods, receives considerable attention.

The book on the whole is well written, it contains a wealth of information about the subject of which it treats, both statistically and as the result of the personal experience of the author. It is replete with excellent photographic reproductions and deserves to have its place among the works above mentioned as being one of the best of the English writings on the general subject.

WHITE.

DAS WESEN MENSCHLICHEN SEELEN- UND GEISTESLEBENS. By Dr. Berthold Kern. Verlag von August Herschwald, Halle a. S., 1907.

This book is an argument for pure reason. Natural science is unable yet to explain itself and philosophy is referred to in order to explain phenomena, clear up its fundamentals, and to aid in assuring science of its own worth. This is especially true of mind phenomena. The world at present is a world of concepts, there is bodily and soul conception, space and spaceless. Difficulty of proof lies in the identity of mind and body.

The author resorts to the localization theory, showing that certain mental phenomena always occur in certain localities in the brain, and by this means shows the close relationship of mind and body. Based upon this he insists upon the close relationship of mental and physical doings and avers that physical acts convey ideas of space, and mental the spaceless concepts. He shows that the spaceless concepts, however, arise merely as mental and not physical concepts. If we describe a reality with spaceless concepts we receive the mental image, and if we do it with space conceptions, then we use the bodily factor. Therefore we must say mind or body according to any state of mind.

The author says the present method of thinking is too confined. With heightened intellect without disharmony between willing and doing he constructs ethics whose highest aim is truth and devotion to the universe.

S. D. LUDLUM.

## Notes and News

*Post-graduate Course in Psychiatry in Munich.*—The program of the next post-graduate course in psychiatry to be held in the Psychiatric Klinik of Prof. Kraepelin in Munich, beginning October 25, 1909, at 9 A. M. is as follows:

1. Alzheimer: Normal and Pathological Histology of the Cortex, twenty hours.
2. Brodmann (Berlin): Topographical Histology of the Cortex, eight hours.
3. Isserlin: Psychodiagnosis and Psychotherapy, six hours.
4. Kattwinkel: Neurological Demonstrations, eight hours.
5. Kraepelin: Clinical Demonstrations, fifteen hours.
6. Kraepelin: Clinical Experimental Psychology, six hours.
7. Liepmann (Berlin): Aphasia, Apraxia, Agnosia, ten hours.
8. Plaut: Serodiagnosis and Cytodiagnosis, six hours.
9. Rüdín: Facts and Problems of Degeneration, six hours.
10. Rüdín: Medico-Legal Demonstrations, six hours.
11. Weiler: Psycho-clinical Diagnosis, eight hours.

Visits to the Clinic, to the asylums of Eglfing and Gabersee.

Price of course 60 Marks.

For further information address Dr. A. Alzheimer, Psychiatrische Klinik, Mussbaumstrasse, München.

*Alaska-Yukon-Pacific Exposition.*—The directors of the Alaska-Yukon-Pacific Exposition announce that physicians visiting the Exposition may have their mail addressed in care of the Emergency Hospital, in which a room has been set apart for their use as a reading and writing room.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### THE SURGICAL TREATMENT OF ATHETOSIS AND SPASTICITIES BY MUSCLE GROUP ISOLATION.<sup>1</sup>

BY SIDNEY I. SCHWAB, M.D.,

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM, ST. LOUIS UNIVERSITY  
MEDICAL SCHOOL, ST. LOUIS, MO.

AND NATHANIEL ALLISON, M.D.,

CLINICAL LECTURER ON ORTHOPEDIC SURGERY, WASHINGTON UNIVERSITY, ST.  
LOUIS

We wish to speak in this preliminary paper of a method of surgical treatment of athetosis and spastic conditions of the extremities, and to point out first, the improvement that follows, and second, how this improvement may be made the basis for carrying out more readily such physiologically planned exercises as are required. The surgical methods described here are believed to be novel in their application to the problems under consideration, though the basic technical procedure is both well known and fully recognized. From a careful search through the large and constantly increasing literature on spasticity, athetosis, muscle contractures, and allied conditions, we have found that they have been discussed either from the theoretical viewpoint of their nervous origin and mechanism of production, or from the practical standpoint of their surgical relief by the procedures now in vogue in orthopedic surgery, namely, tenotomy, myotomy, muscle or tendon transference, and nerve anastomosis. The neurological literature and our own observations lead us to be-

<sup>1</sup> Read at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1909.

lieve that the principles underlying the conditions here considered, and upon which our method is largely based may be stated in this way. First, athetosis and spastic conditions of organic origin are essentially similar processes, athetoid movements may be regarded as variants of permanent tonic spasticities. Second, they may be said to be due to several factors, the more salient of which are, a constantly active set of highly irritative impulses, which arise from the cortical motor cells. These impinge upon the muscles which are normally in a condition of slight hypertonus. The over-action of the congenitally stronger muscle group as compared to that of the weaker antagonist group causes this temporary state to become permanent, and there results then a characteristic attitude and deformity. Third, the essential mechanism is nervous in origin—meaning by that, that the nerve or nerves supplying the muscle or muscle group by which this state is brought about, are the anatomical structures which demand primary attention as the focus of surgical attack.

It is perhaps, a fair criticism of the surgical measures used up to the present time to say that they are concerned primarily with the effort to relieve the end results of perverted function and not with the structure more directly responsible. This explains in part the dissatisfaction with the results so far obtained, as can be gathered from the discussion of the treatment of the spastic paralysis held at the French Surgical Congress of 1908<sup>2</sup> in Paris.

Kirmisson (Paris) said: "As far as the spasmodic paralyses are concerned the indications for tendon transplantation appear to me to be even more limited, the fortunate results which have been attained in operating on the upper extremity in infantile hemiplegia would however encourage further attempts in this direction. In Little's disease on the contrary, tendon transplantation does not seem to me to have any place at all. The results of nerve transplantation are too few in number and too recent in point of time to justify any conclusions. It is quite possible that in time they may take the place of muscle transplantation in the paralyses, perhaps even completely replace them."

Hoffa (Berlin) said: "In spastic paralysis it is necessary to cut out the antagonist group which is spastic and to transfer by tendon graft the surplus energy to the paralyzed antagonists.

<sup>2</sup> Péraire, *Révue d'Orthopédie*, March, 1908.

I have done very few tendon grafts in Little's disease. These transplantations do not appear to me to have an appreciable advantage over the simple tendon lengthening, followed by correction and apparatus."

R. Jones (Liverpool) said: "In spastic paraplegia I have done ten transplantations: 4 the flexors of the wrist into the extensors, 6 the biceps, or the biceps and semi-membranosis into the patellar tendon. In the four cases of transplantation at the wrist, representing eight arms, I have had only *three* successes, one of which was complete. In the six other cases, representing twelve legs, I have had *six* good results and four partial successes. In cases of spastic paralysis I have already excised portions of the adductors and flexors of the leg, and I have elongated the Achilles tendon, confining the extremities for two or three months in extreme abduction. In spite of this I have obtained better results by transplanting the flexor tendons. The transplantation of the sartorius and biceps into the quadriceps has given four complete successes, three partial and four complete failures."

Redard (Paris) said: "In Little's disease and in the various spastic affections, tenotomy is in general preferable to transplantation. It is not advisable to operate hastily. One should at first correct the deformity so that later the transplantations judged necessary may be carried out."

There are to be found in the literature many statements of similar import which go to show how unstable and unsatisfactory are the opinions of those engaged in treating this class of cases.

Our experience with a sufficiently large material has led us to the same conclusions. The causes for the lack of permanent improvement may be summarized as follows: First, in all the methods used the nerve supply which is the conducting structure by which the abnormal impulses are brought into action, remains untouched. Second, in nerve anastomosis, there is simply a transference of the path along which these abnormal impulses reach the muscle or muscle group, granted even that the anastomosis is successfully established—a matter of considerable doubt. Tenotomy and myotomy, besides being merely an attack upon the end result, have the additional disadvantages of being but transitory in their benefits, the condition being all too frequently re-established. Furthermore by the necessary supplementary treat-

ment—*i. e.*, plaster-of-paris bandages or fixation apparatus, not only are the local antagonists made much weaker, but also the whole muscular mechanism of the extremity is seriously impaired by the confinement in bed and the tight bandaging necessary. The same criticism holds true for muscle transplantation in spastic cases; in addition the scope of this method is necessarily limited to a narrowly selected group of cases, in which only a single muscle may be utilized.

In consideration of these facts we have been led to devise a method which we shall refer to as *muscle group isolation*. This implies the isolation of the muscle or group of muscles which are at fault in the production of contracture, deformity or athetosis. It is made effective by cutting off from the central nervous system the connection along which the abnormal impulses, active in causing spasticity or athetosis, are transmitted. This is done by a direct attack upon the nerve itself, by isolating it, and injecting it with an alcoholic solution. There has resulted in the cases to be described an immediate paralysis of the physiologically stronger group of muscles without interfering with the free muscular use of the antagonists. At this point physiological exercises planned to further strengthen the antagonist may be used.

Our experience with tenotomy, myotomy and tendon transference has taught us that any method of surgical treatment designed to give better results than those now in general use must meet these requirements. First, it should be an operation reasonably safe in skillful hands. Second, it must be based upon a convincing physiological principle as far as our present knowledge goes. Third, it must be anatomically feasible.

In the selection of a case on which to try this method for the first time, a simple case of athetosis in which the ulnar nerve was regarded as being primarily involved, was chosen, for the reason that the operation would be neither difficult nor dangerous. Inasmuch as this case presented a median nerve complication, it was an easy matter to inject the median nerve at a later time. Our experience in this instance encouraged us to attempt a more complicated operation on a case in which the spasticity was both more general and more intense. Here the condition was bilateral adductor spasticity of the lower extremities in so-called Little's disease, requiring an isolation and an injection of the obturator

nerve, which supplies the adductors of the thigh. This nerve descends through the inner fibers of the psoas muscle and emerges from its inner border near the brim of the pelvis. It then runs along the lateral walls of the pelvis above the obturator vessels to the upper part of the obturator foramen where it enters the thigh and divides into an anterior and posterior branch, separated by some of the fibers of the obturator externus muscle, and lower down by the adductor brevis. For the purpose of this operation it was necessary to discover the nerve above the division into its branches, that being the necessary point for injection. The fact that this nerve is a motor nerve and supplies a most powerful muscle group, namely the adductors of the thigh, the gracilis, pectineus, adductor longus, brevis and magnus, and that this group is all important in the production of cross-legged progression, made it a most favorable object for testing the value of this operation.

CASE I. *Congenital Spastic Hemiplegia* (right side). Girl. æt. 12 years. Mentality of normal child of about eight years. Previous history unimportant. General physical state negative.

*Motor System.*—In walking the body is held to the right side—rigid; the knee is flexed 15 degrees and the thigh flexed on the trunk a few degrees. The right side is lifted forward with the weight of the body on the other limb. The weight when transmitted to the right foot is borne in a position of marked pronation and eversion of the foot; one half inch shortening of right lower extremity; three fourths inch atrophy of thigh and one inch atrophy of calf. The thigh is adducted 10 degrees. The right arm is held slightly flexed at the elbow, flexed at the wrist and a slight flexion of the fingers when the arm is in a normal position. It is impossible to supinate. There is a slow athetoid movement at the fingers and the wrist of the right hand consisting of worm-like traction of the terminal phalanges with a slight spreading of the fingers. This movement sometimes extends to flexion of the wrist. This athetoid movement is increased by intended movement. At the end of the athetoid movement the fingers are widely separated and remarkably spastic. The fingers on the ulnar side of the hand are separated from the others.

Reflexes: Supinator, tendon and muscular reflexes of the upper extremities are present on the right side—no exaggeration; on the left side they are normal. Abdominals are present and equal; right knee-jerk slightly plus; the left not obtained. Achilles not obtained on either side. No clonus; marked Babinski on right, spreading of the toes; normal on the left, sometimes a periodic flexion on the right by stimulating the sole of the foot

on the left. Pupils react sluggishly; ocular movements are normal and equal. Tongue is protruded straight. There is a marked insufficiency of the seventh nerve on the right side.

October 26, 1908. Operation. Ether; one inch incision made over internal condyle of humerus, posterior subcutaneous tissue retracted, ulnar nerve exposed for one half inch of its course. Into the sheath of the exposed nerve were injected thirty drops of 80 per cent. alcohol solution. Wound closed with cat-gut sutures. Bandage applied. Good recovery.

October 27, 1908. There is a blunting to all forms of sensory stimulation over the ulnar territory, running well upon the palm of the hand and over the posterior aspect of the little and ring fingers. On account of the lack of intelligence of the patient, a finer test is not possible. The spasticity has completely disappeared at the little and ring fingers and flexion can be made with no sense of resistance. The spasticity of the wrist has completely disappeared. Extension at the wrist is voluntary but slow. The fingers are held passively flexed but can be easily extended. The little and ring fingers do not take part in the athetoid movement at all. The skin of the hand shows no special change.

October 30, 1908. Over the ulnar territory there is still tactile blunting impressions. The two little fingers are very flaccid except when the other muscles are put into activity when there is stiffness to be observed. There is a slight tremor to be seen at the little finger which seems to be of the same general character as that which formerly preceded the athetoid movement. The voluntary motion with the other fingers is still absent. It is impossible for the patient to abduct the little finger or to bring it forward in relation to the thumb.

November 3, 1908. Child anesthetized; dressing removed; wound of first operation found to be united by first intention. Second operation: Incision 2 inches long was made over the flexure of the elbow, anterior, vertical in direction. The skin and subcutaneous tissue divided. The tendons of the biceps muscle exposed to view; median nerve was discovered, exposed for three fourths inch of its extent and two silk ligatures were tied in single knots; one at the upper extremity of the exposed nerve and the other at the lower. Into the nerve were then introduced some sixty minims of 80 per cent. alcohol through three different punctures. The nerve was seen to be swollen considerably between the ligatures. The wound was then closed with catgut sutures and it was found that the spasticity at the wrist, at the fingers and at the elbow did not prevent complete extension of fingers, of wrist and supination of the forearm. Plaster of Paris was applied, holding the arm in complete supination with complete extension of wrist and extension of fingers and thumb. Good recovery from anesthetic; no pain.



November 4, 1908. Plaster removed by cutting away its anterior aspect, keeping the posterior part for future use as a gutter splint. Region of the wound not disturbed. The median's supply to the palm and back of the hand was found to be completely lost. This together with the ulnar territory before examined, leaves the hand anesthetic over the territory supplied by these two nerves. The wrist, fingers, thumb and all the joints are now completely flaccid. When the hand at the wrist and fingers is hyperextended, there is felt some slight resistance. There is no voluntary movement with the exception of a slight extension at the wrist. There is no trace of spasticity and no athetoid movements to be observed. The hand feels perfectly soft and is very similar to the unparalyzed hand.

November 9, 1908. The hand is held flexed at the wrist in a position suggesting a wrist-drop due to a musculo-spiral paralysis. The fingers are somewhat puffy but no actual edema, due probably to tight bandages. The fingers are warm and the nails pink. The hand feels perfectly flaccid, there being no trace of spasticity, even upon hyperextension or hyperflexion at the wrist. There is a slight abduction and adduction of the little finger—voluntary, due probably to action of the interossei-lumbricales of the little and ring fingers. Other than this, there is no voluntary movement.

November 14, 1908. There is a slight adduction of the thumb towards the little finger and a slight movement of the little finger which is voluntary. The hypalgesia remains about the same with the exception of the thumb in which the sensation is perfectly normal. The wrist is still flaccid, held in a position of wrist-drop. There is no evidence of trophic changes.

December 19, 1908. Hyperextension of the fingers; no evidence of spasticity. Passive extension of the wrist can be executed. Hyperextension of the wrist is possible with slight resistance. The fingers are loose and flaccid. The hand is held in a position of slight wrist-drop with extension of the fingers and thumb. Voluntary movements: The thumb can be abducted to its full extent. The first finger can be completely extended. The second, ring and little fingers are extended together slightly. The athetoid movement has completely disappeared, both at rest and in intended movements. The first and second interossei group is capable of some movements. The forearm is held in marked pronation—spastic. There is evidently some return of function in the median and ulnar nerves. Sensation has partially returned.

CASE 2. *Spastic Paraplegia* (Little's). Girl, æt. 4 years. The child is one of twins, labor at birth being very difficult. The other twin died after twenty minutes. There are three other children in the family—older; all normal and healthy. No history of tuberculous disease or syphilis in the family. Child after birth was noticed to be peculiar, not moving its arms or legs nor-

mally. Was weak and in poor health; nursed badly. Has never walked or made any attempt to walk. Was treated by the application of braces which did not benefit the condition, according to the parents, and were only worn for a short time. Mother does not consider that the child has normal intelligence, though she recognizes people and things and feeds herself fairly well. In the last two years health has improved and the child has gained in weight and strength.

*Motor System.*—Fairly developed and fairly nourished child; expression fairly intelligent; uses a few words quite well; sits up without support when legs are not extended on thighs. Arms are semi-spastic but have a fair degree of coordination. Back muscles are weak but not spastic; muscles in the neck also weak. Legs: Adductor group of muscles on both sides contracted and very markedly spastic. The tendon of the abductor longus on each side stands out like a whip-cord. On standing the child assumes a cross-legged position, due to the spasm, the knee on the right side being advanced over the knee on the left. The hamstring group presents a very marked degree of spasticity which can be overcome by pressure. This is also true of the gastrocnemii. Knee-jerks on both sides, plus; Achillis jerk, increased; both great toes are held in a position of continuous extension.

November 11, 1908. Operation. Ether. Incision two inches long made on the anterior aspect of the right thigh, beginning a finger's breadth inside the center of Poupert's ligament, running vertically. The skin and subcutaneous tissue divided. The internal border of the adductor brevis and longus made out, blunt dissection carried at their internal border to pectineal fascia. This was divided and drawn forwards and inwards, exposing the pectineus and obturator externus muscles. The lower border of the horizontal ramus of the pubis was exposed and explored throughout its extent. After considerable difficulty, the obturator nerve was discovered emerging from the lower surface of the ramus in the upper extremity of the operative wound. It was seized with artery forceps, drawn forwards and injected with 80 per cent. alcohol solution. Immediately the spasm of the abductor group of muscles was noticed to be relieved and the thigh was rotated outwards, flexed and slightly abducted. The wound was closed with a silver wire subcutaneous stitch and sealed with collodion. A bandage was applied and the child was returned to bed in good condition. On account of the difficulties, the operation took one and one fourth hours. After recovery from anesthetic, the right leg was flexed 45 degrees, rotated outwards 45 degrees and abducted 20 degrees. Spasm of the adductor group of muscles has entirely disappeared, allowing free abduction of the thigh.

November 12, 1908. Child has developed high temperature, rapid

rough breathing, many rales heard throughout the chest. This condition has increased rapidly and cyanosis has developed with difficulty of breathing. Stimulation of all kinds resorted to without effect. Child died at 12:00 m. Diagnosis: Broncho-pneumonia.

CASE 3. *Spastic Diplegia* (Little's). Girl æt. 5 years. Paralysis of both lower extremities was noticed at about the time the child was six months of age. Was very slow in making attempts to walk. Seen first in June, 1908, at the Martha Parsons Hospital. At that time there was contracture of the gastrocnemii, hamstrings and adductors. The Achilles tendons were divided. After three weeks in plaster, in extension, abduction and right angle position of the feet, the child was again put on her feet. The shortening of gastrocnemii group with corresponding lengthening of tendon allows the child to walk heel down. Systematic attempts at education in gait have been faithfully carried out by the child's parents. Returns to the hospital November 14, 1907, for further treatment. General health has been good.

*Motor System.*—Well developed, robust child, rather large and fat for age. No skeletal deformity except an inward twist of both tibiae which is considered to be due to development in adduction and internal rotation of the thighs. Average degree of intelligence, evidenced by talking well, remembering persons and places. Disposition irritable with a tendency to cruelty. Heart and lungs normal; urine normal; no adenoids or disease of nasopharynx. Upper extremities show no signs of spasticity nor do the muscles of the trunk. Lower extremities show spasticity of adductor groups, slight of hamstring group and slight of calf group. There is also marked spasticity of the internal rotators of the thigh, evidenced by marked toeing-in which accompanies or is associated with, the spasticity of the adductors. The child walks with a marked spasticity. Feet are flat upon the ground, but are turned in so as to be at about 50 degrees internal rotation. The knees are held stiff, slightly flexed, the adduction of the thighs bringing them into close contact in standing and making them strike as steps are taken. In accomplishing this progression, the child swings the trunk and arms. The head is held erect and the eyes are directed normally. Knee-jerks are pathologically increased. There is no tendo Achillis reflex at all on account of former operation; plantars are absent; Babinski can not be obtained. The feet and lower part of the legs feel cold to the touch and are mottled here and there by bluish discolorations. The spasticity of the left leg is more marked than that of the right, which produces in the gait peculiar unevenness of progression. There is no evidence of wasting of the muscles; they feel tense and hard. Sensation appears to be normal.

November 16, 1908. Operation. Ether. Incision made on

the right thigh vertically, one and one half inches in extent, beginning at Poupart's ligament one half inch inside of its middle point, carried downward through subcutaneous fat to fascia covering adductor group of muscles. This was divided in line of incision. By blunt dissection the internal borders of the adductor brevis and longus were made out, opening carried down to the pectineus fascia at the horizontal ramus of the pubis. In line of incision pectineus muscles divided and retracted. Obturator nerve was discovered issuing from below the horizontal ramus of the pubis at the upper extremity of the wound. The nerve was found with much greater facility in this case than in case No. 2. It was lifted up by a pair of artery forceps and 60 minims of alcohol were injected into its sheath. The wound was closed with catgut and subcutaneous silver wire suture and sealed with collodion. Examination of the leg and thigh immediately after operation, before the child had regained consciousness, showed the adductor group of muscles to be flaccid. There was no resistance to external rotation of the leg and thigh, the whole lower extremity remaining in external rotation 45 degrees without restraint. Comparing this with the opposite side, it was seen that the internal rotation of the left lower extremity still continued and could not be overcome without the use of force. Force being released it immediately returned into a position of 50 degrees internal rotation. Recovery good. Child stood the operation well. Comparatively no loss of blood or any evidence of shock. Time: 35 minutes.

November 23, 1908. For the past few days child has been allowed to walk a few steps each day. The right limb is held in abduction and slight external rotation. There is no spasticity of the adductor group. The wound is healing well but there is some solution of the skin at its edges, due to contamination of the dressing with urine. There has been no temperature and no pain. This morning, 9:00 a. m., operation on the left side. Ether. Incision made at the same place carried rapidly down to the location of the nerve which was exposed with much less difficulty than previously. Technique was not changed. After injection the spasticity of the adductor group disappeared, allowing the leg to abduct and externally rotate freely. Based upon the experience of the former operation and the slight contamination of the wound, it was decided to place the limbs in wide abduction and external rotation in plaster of Paris to protect the operated areas. This was done. Child took the anesthetic well and made a good recovery. Plaster-of-Paris dressing removed after five days.

December 19, 1908. Legs are held passively in abduction. There is no resistance offered to passive abduction by the adductor group of muscles. The whole lower extremity is rotated slightly externally except for the twist in the tibiae which turns the feet

slightly inwards. This can be easily overcorrected. In walking the gait is abducted, the knees being held at least four inches apart. There is still slight toeing-in, but the patient has made remarkable improvement in controlling voluntarily this defect.

In attempting to summarize the results of this study, we realize the tendency so difficult to overcome of drawing conclusions from an insufficient experience. We have only in mind therefore tentative conclusions and suggestions based upon them. As stated in the beginning, this paper is to be considered as preliminary to a more complete study of the subject.

We believe, therefore, that we are justified from the foregoing experience in advancing the idea that muscle group isolation is a feasible surgical procedure and that it makes physiologically planned exercises more directly effective in the treatment of athetosis and spasticities.

*Note.*—Since the writing of this paper the cases referred to have been under more or less constant observation, and we are able to report at the present time that the effect of the treatment has been fully in accord with the principles suggested in the paper. We wish to emphasize the fact that the muscles paralyzed by the alcoholic injection of their nerve supply are apparently slowly regaining their function. The number of spastic cases subjected to this treatment forms now a considerable material. The details of these will be published at a later date. In addition to the spastic cases we have tried this method in three cases of anterior poliomyelitis. This has necessitated a somewhat new procedure of muscle group isolation plus nerve anastomosis. The details in this class of cases will be taken up in a subsequent paper.

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## THE THALAMIC SYNDROME

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In 1906, Dejerine<sup>1</sup> first called attention to a symptom-complex occurring in certain cases of hemiplegia in which anatomically there was only a slight involvement of the motor pathway. The lesion, however, involved part of the optic thalamus so as to cut off a portion of its sensory distribution, but spared the optic radiations. This symptom-complex he characterized as the thalamic syndrome. In three of the cases the situation of the lesion was anatomically confirmed by autopsy and subsequent serial sections of the brain. Briefly the symptoms observed in all the cases were as follows: There was a slight hemiplegia which rapidly regressed, a persistent hemianesthesia accompanied by other profound disturbances of sensation, hemi-ataxia, astereognosis, severe paroxysmal pain limited to the hemiplegic side, and occasionally choreo-athetotic movements involving the same side. The facial muscles were only slightly involved. Hemitremor was absent in all the cases. The reflexes were present on the paralyzed side, but the Babinski phenomenon was absent. Bone conduction was either diminished or had entirely disappeared, while the muscular and articular sensibility was entirely lost. Vaso-motor and trophic disorders were frequent.

Anatomically, serial sections of the brain revealed a lesion, not only of a portion of the fibers of the internal capsule, but also of the external nucleus of the optic thalamus and portions of the median and internal nuclei. According to Dejerine this dissociation of motor and sensory phenomena could easily be explained on the basis of an involvement of both the pyramidal tract and the optic thalamus. The motor disorders bore a direct relation to the intensity of the capsular lesion, while the sensory disturbances were due to the lesion in the optic thalamus, which

<sup>1</sup>Thomas and Chiray. "Sur un cas de syndrome thalamique," *Rev. Neurol.*, May 30, 1904. Dejerine and Roussy. "Le syndrome thalamique," *Rev. Neurol.*, June 30, 1906.



destroyed the connections of the thalamo-cortical neurones (the terminal fibers of the sensory pathway). If the thalamus were found intact and the lesion involved merely the pyramidal tract the same symptoms could take place if the thalamic connections with the somesthetic area of the cortex were destroyed. Furthermore, Dejerine pointed out that experimental destructive lesions in the thalamus of monkeys, sparing the internal capsule, caused no paralytic phenomena. Here we seem to have a group of identical symptoms occurring in certain hemiplegics, resulting from a localized cerebral vascular lesion, in which the thalamus or its connections were more involved than the motor pathway of the pyramidal tract.

It is well known that lesions of the optic thalamus produce sensory disturbances of the opposite side of the body, in the same manner that capsular lesions produce a paralysis of the opposite limbs. Hemianopsia occurs only when the optic radiations or the external geniculate bodies are involved. It is doubtful whether lesions of the pulvinar can produce hemianopsia. The course of the sensory pathway is very complicated, particularly the relations of the median lemniscus to the cerebral cortex and also of the bulbo-thalamic neurones. The researches of Campbell,<sup>2</sup> however, have thrown considerable light on the connections of the thalamus with the cortex, the so-called cortical lemniscus of von Monakow. According to Campbell the post-central gyrus alone is sensory in function and constitutes the higher cortical terminus for the conveyance and appreciation of impressions relating to the complex tactile sense. In this area there are no true motor cells of Betz. In a disease primarily of the sensory neurones, namely tabes, the cortical cell changes were found by Campbell to be limited absolutely to the post-central gyrus. Furthermore, in those conditions where the common sensation suffered a disturbance (tactile, muscular, stereognostic, pain, temperature), the histological brain changes were also confined to this gyrus.

The course of the bulbo-thalamic neurones, however, still remains a disputed question. According to one view (Hoesel, Flechsig) the axones of the sensory pathway pass without interruption through the internal capsule and out through the corona

<sup>2</sup> Alfred W. Campbell. "Histological Studies on the Localization of Cerebral Function," 1905.

radiata to the cerebral cortex. The opposite view is held by von Monakow, who claims that these lemniscus fibers terminate in the optic thalamus, the connections with the cerebral cortex being made by a second set of neurones of a higher order (cortical lemniscus, corona radiata of the thalamus).

The clinical and experimental evidence seem to be in favor of the latter view. In experimental lesions of the lemniscus in the region of the pons the degenerated fibers can be traced only as far as the optic thalamus, the thalamo-cortical fibers being left intact (von Monakow, Mott, Jakob, Dejerine). The lemniscus tract seems to be interrupted in the thalamus and to reach the cortex by another set of neurones. The optic thalamus is therefore connected with the sensory cortex on one hand and with the posterior columns of the spinal cord on the other. The posterior columns of the cord end in the nuclei in the medulla (nucleus gracilis and nucleus cuneatus), the fibers from these nuclei pass to the raphe as internal arciform fibers and decussate there, forming the sensory or lemniscus decussation. After next passing to the space between the olive and the raphe they reach the brain as the chief lemniscus, with the interruption in the thalamus by a second set of neurones before terminating in the cortex. Therefore the sensory tract consists of three sets of neurones, the spino-bulbar by means of the posterior columns (neurones of the first order), the bulbo thalamic (median lemniscus, or neurones of the second order) and the thalamocortical radiations (neurones of the third order). Lesions of any portion of the thalamus, if the optic radiations and the external geniculate bodies are spared, produce sensory disturbances of the opposite side of the body, in the same manner that capsular lesions produce a crossed paralysis through the pyramidal decussation. Lesions in the corpus callosum also produce symptoms of one side of the body only, such as hemi-paresis, hemi-tremor and one-sided apraxia (Liepmann). In one of my cases of continual tremor and weakness of the right arm, followed by a flaccid paralysis of this arm, there was found at autopsy a tumor of the splenium of the corpus callosum. Beever<sup>3</sup> also has pointed out that tumors of the optic thalamus and of the sub-thalamic region give rise to involuntary movements, ataxia and tremor of the opposite limbs.

<sup>3</sup> Charles E. Beever. "Diagnosis and Localization of Cerebral Tumors," *Lancet*, February 9, 23; March 16, 1907.

In an extensive monograph Roussy<sup>4</sup> has given us a study of thalamic lesions in man and the results of experimental destruction of the optic thalamus in animals. Experimental lesions of the thalamus in cats, dogs and monkeys produced circus movements, rotation of the body to the side opposite the lesion, disturbances of deep and superficial sensation, loss of muscular sense of position, astereognosis, hemianopsia and slight deafness. Paralysis, contractures, convulsions, phenomena of cerebral excitation, disturbances of the mimic activity of the face and loss of sphincteric control were absent. The same phenomena were observed in pathological conditions in man. One experiment on a monkey was particularly valuable, because the optic thalamus alone was destroyed, while the internal capsule and the sub-thalamic region were not involved in the lesion. In this animal the symptoms were as given above, the same symptoms are invariably occurred in thalamic lesions in man. The degeneration in this case involved principally the thalamo-cortical radiations, while the thalamo-spinal tract (second sensory neurone) was not involved. This experiment confirms, therefore, the views of von Monakow, Dejerine and Mott, concerning the interruption of the sensory pathway in the thalamus, the connections with the cortex being made by another set of neurones (thalamo-cortical radiations).

More recently this same observer<sup>5</sup> has reported, both clinically and anatomically, two more cases of the thalamic syndrome occurring in hemiplegia. He divides the disorder into two types: The first type (pure thalamic syndrome) occurs in hemiplegia in which the paralytic phenomena are slight, but in which hemichorea, hemi-ataxia, pain and sensory disturbances are prominent. In these cases there is a lesion of the external and internal nuclei of the thalamus with only a slight participation of the internal capsule. In the second type (mixed thalamic syndrome) the hemiplegia is more marked and may be spastic in character, but the cases are associated with other signs of thalamic involvement, such as pain and deep and superficial disturbances of sensation.

The thalamic syndrome is rather uncommon. Up to the

<sup>4</sup>Gustave Roussy. "Le couche optique: Le syndrome thalamique," 1907.

<sup>5</sup>G. Roussy. "Deux nouveaux cas de lesions de la couche optique, suivis d'autopsie," *Rev. Neurol.*, March 30, 1909.

present only a few cases have been reported, about eighteen in all. The purpose of this paper is to report four such cases which came under my observation.<sup>6</sup>

CASE I.—P. B., age 31, had suffered for eight years from a sense of stiffness in the muscles of the entire left side of the body, without paralysis or any subjective feeling of numbness. This was shortly followed by several attacks of tremor of the left arm and leg during intervals of a year. There was also a history of more or less headache, but no vomiting. This was relieved by the application of a "salve" prescribed by a physician, although there was no history of a primary sore. When the patient first came under observation, during June, 1908, he complained of pain, and burning and itching sensations involving the left arm and the left side of the body. A physical examination disclosed the following condition: The patient was perfectly aware of his subjective sensory symptoms. The knee-jerks and knee cap reflexes were brisk and rather more lively on the right. The muscular movements of the eyes were normal, there was no nystagmus and the pupils were equal and reacted promptly to light and accommodation. The visual field was normal and there was no central scotoma. An ophthalmoscopic examination disclosed a slight elevation of both optic nerves (one half diopter) suggesting a beginning choked disc. Ankle clonus was absent. There was no Oppenheim or Babinski reflex. The Achilles, cremasteric and abdominal reflexes were brisk and equal. The tongue was central. There was some tremor of the hands, more distinct on the left, but no choreic or athetotic movements. No swaying in Romberg. In walking there was a tendency to drag the left leg and tests showed that the entire motor power of the left side was weaker than the right. There was a complete left hemi-hypoalgesia and hypoesthesia, involving the mucous membranes on the left and the left cornea and conjunctiva. The mimic activity of the face was normal. No spasmodic laughing or crying. No ataxia, astereognosis, asymboly or incoordination of movements. Touch was accurately localized. Under the use of mercury and increasing doses of potassium iodide the headache improved and the optic discs became normal. Unfortunately the patient disappeared from observation before any further study of his condition could be made.

CASE II.—G. M. P., age 45, first came under observation on October 25, 1907. There was no history of syphilis. During September, 1906, there was an attack of left hemiplegia which had greatly improved by the time he was first seen. A number of physical examinations may be summarized as follows: The

<sup>6</sup>Cases I and II are from the Neurological Clinic of the Boston City Hospital (services of Dr. Prince and Dr. Thomas). Case III was referred to me by Dr. H. W. Goodall, of Boston.

left arm and leg were in a condition of moderate hemiplegic spasticity and in walking he dragged the left leg. There was considerable dull pain over the entire left side, the limbs feeling heavy and numb. There was a slight left facial paralysis and the tongue was protruded slightly to the left. On the paralyzed side the deep reflexes were much exaggerated with a moderate left ankle clonus and a left Babinski. There were no choreic or athetotic movements. Motor and ideational apraxia were absent, but astereognosis and asymboly were marked in the left hand. Over the entire left side of the body there was a prominent hypoaesthesia and hypoaesthesia, but no sensory disturbances to temperature. There was a moderate disturbance of the localization on the left side, the patient missing the part of the body touched by about 5 cm. with the eyes either open or closed. There were ataxia and incoordination of the left arm and left leg. The pupils were equal and reacted promptly to light and accommodation. There was no hemi-anopsia. The right leg was cold and cyanotic. The mimic activity of the face was normal. No spasmodic laughter or crying.

CASE III.—S. A. P., age 30. At the age of seventeen the patient had an attack of "nervous exhaustion," but recovered in a year. When twenty-one years of age she had an illegitimate child, but there was no history of a specific disease. About January, 1907, she began to suffer from headache and vomiting. This gradually increased in severity and about six months later she rapidly lost sight of the left eye. At this time she was told that she had "a tumor at the base of the brain" and that her left optic nerve was "swollen." She was placed on large doses of potassium iodide and at the end of six months vision had greatly improved, while the headache and vomiting became less severe. Soon after the onset of the headache she noticed severe pain in the right leg and right arm, associated with a subjective feeling of numbness on the left side of the body. In August, 1908, she had a convulsive attack.

An examination of the patient disclosed a rather thin, but well nourished woman. The superficial and deep reflexes were present, but decidedly more brisk on the right. There was no Babinski or Oppenheim reflex and no ankle clonus. The tongue was central and steady. Facial asymmetry and involuntary laughing or crying were absent, although the patient was somewhat lachrymose in manner. No hemi-athetotic or choreiform movements. An examination of the sensation demonstrated marked hypoaesthesia and hypoaesthesia over the entire right side. Intention tremor of the hands was very marked, more particularly on the right. There was ataxia and asynergia of the right arm and leg. These disturbances of motility and sensation were entirely absent from left side. There was marked swaying in Romberg's position, the patient invariably falling to the right. In walking

there was dragging of the right leg and both the right arm and leg were weaker than the left. In fact, there was practically no power of grasp in the right hand. The pupils were equal and reacted promptly to light and accommodation. There was no weakness or paralysis of the eye muscles; nystagmus and hemianopsia were absent. An ophthalmoscopic examination showed a slight haziness in the outlines of both optic discs. The muscular sense of position was lost in the right arm and leg, and she was unable to localize light touch on the right side. Motor and ideational apraxia were absent, but astereognosis and asymboly were marked in the right hand. Bony sensation to a tuning fork was completely lost on the right side. Under the use of potassium iodide and inunctions of mercury the condition greatly improved and the headache and vomiting ceased.

CASE IV.—G. A., age 30. In October, 1901 (seven years previously to coming under observation), patient developed a sudden right hemiplegia during labor. She immediately became unconscious and remained so for four days. For a time there was a moderate degree of sensory aphasia, but this soon improved. The right hemiplegia has persisted up to the present. A physical examination showed a complete right hemiplegia; the patient dragged the right leg in walking and the fingers of the right hand were held in a position of hyper-extension, but there were no athetoid or choreiform movements. The deep reflexes were present, but exaggerated on the right. There was a right Babinski, but the left plantar reflex was normal. The tongue was steady and central. The right naso-labial fold was flatter than the left. The grasp of the right hand was weak and the motor power of the right leg was weaker than the left. The pupils were equal and reacted promptly to light and accommodation. There was nystagmus of both eyes on looking to the right, but the eyeball remained steady when the patient looked to the left. There was no hemi-anopsia. There was some weakness of the right external rectus. Incoördination and ataxia of the right hand was marked, particularly when the eyes were closed. The patient knew how to use objects with the right hand (absence of apraxia), but with the eyes closed, she was unable to tell either the shape or nature of objects by palpating them with the right hand (astereognosis and asymboly). The sensory disturbances were as follows—complete right hypoalgesia, complete analgesia on the tips of fingers of the right hand, anesthesia to light touch on palmar and dorsal surfaces of right hand, complete inability to localize light touch in palm of right hand, either with the eyes closed or following the stimulus with the eyes open. The heart was negative. There was no emotional disturbance.

The findings in these four cases may be summarized somewhat as follows: In cases I and III the lesion was probably of the

nature of a gummatous tumor involving the whole or a portion of the optic thalamus, but sparing the internal capsule. Furthermore, the pathological changes in the optic nerve pointed to an intra-cranial neoplasm. The syphilitic nature of the lesion was evident from the beneficial results of anti-syphilitic treatment. These two cases presented a fairly clear picture of the pure thalamic syndrome, such as the presence of sensory disturbances, motor weakness, astereognosis, pain and ataxia, all limited to one side of the body. In the other cases (II and IV) the thalamic syndrome followed a hemiplegic attack. The lesion was evidently a hemorrhage in the internal capsule, involving at the same time a portion of the optic thalamus. Clinically, localizing symptoms referable to both the internal capsule and the optic thalamus were present, such as hemiplegia, disturbances of the reflexes pointing to a lesion in the pyramidal tract, sensory disturbances, ataxia and astereognosis, limited to the paralyzed side. In both these cases there was a more marked hemiplegia and involvement of the pyramidal tract than entered into Dejerine's or Roussy's description of the syndrome, but the presence of marked sensory disturbances with hemi-ataxia and astereognosis showed an involvement of the sensory pathway, probably in the optic thalamus. These latter cases seemed to belong to the type of the mixed thalamic syndrome. The optic radiations in all four cases were spared, as shown by the absence of hemianopsia.

A point of interest is the fact that none of the cases showed any emotional disturbance, either in the way of an emotional apathy or inhibition or of involuntary laughing or crying. From the researches of Bechterew it had been supposed that the cerebral center for the emotions was localized in the optic thalamus. This observer had shown if the cerebral cortex was destroyed, but the thalamus left intact, that the various emotional reactions remained. On the contrary, if the thalamus was destroyed or diseased, in spite of a parallel integrity of the remainder of the cerebrum, the emotional reactions became either greatly disturbed or were entirely absent. It seems as if the clinical and anatomical data on the thalamic syndrome, to a certain extent invalidate these localizing theories of the emotions, although the other symptoms of the disorder fully harmonize with our knowledge of the functions of the optic thalamus.

# Society Proceedings

## THE NEW YORK PSYCHIATRICAL SOCIETY

January 6, 1909

The President, DR. AUGUST HOCH, in the Chair

### ON THE ETIOLOGICAL FACTORS OF THE PSYCHOSES

By William Mabon, M.D.

The precipitating factors in 961 cases of insanity were considered and the following grouping of forms used:

1. Psycho-neuroses and constitutional inferiorities. These include epilepsy, hysteria, neurasthenia, psychasthenia and constitutional inferiority of various kinds.

2. The psychoses with organic nervous diseases such as brain tumor, gross lesions, traumatic psychosis, senile psychosis and general paralysis of the insane.

3. The toxic psychoses, including alcohol, drugs and other toxic agents.

4. The infective exhaustive psychoses.

5. Depressed states, such as involuntional melancholia, depressive hallucinosis, symptomatic depressions and depressions not sufficiently differentiated.

6. The dementia præcox-paranoic group.

7. The manic-depressive insanity.

The causes as studied were: first, physical; second, mental; and third, combined physical and mental. Of the four hundred forty-two men, 80.99 per cent were found to be due to physical, 13 per cent. were due to mental and 6 per cent. were due to combined causes. Of the five hundred nineteen women, 64.73 per cent. were due to physical, over 30 per cent. were due to mental and about 5 per cent. were due to combined causes.

Of all the causes, alcohol, either alone, or combined, stands out most prominently with a percentage of thirty-seven. Among the men the percentage was fifty-five, while among the women it was twenty-two.

The next in importance were fevers and infections, trauma, privation and overwork.

Among the men the physical causes operated in the following order: (1) Psychoses with organic nervous diseases. (2) Toxic psychoses. (3) Infective-exhaustive psychoses. (4) Psycho-neuroses and constitutional inferiorities. (5) Manic-depressive. (6) Dementia præcox-paranoic group. Among the women the order was as follows: (1) Psychoses with organic nervous diseases. (2) Toxic Psychoses. (3) Infective-exhaustive psychoses. (4) Psycho-neuroses and constitutional inferiorities.

In the men mental causes did not predominate in any single group,



although in the depressed states the mental and physical factors were equal.

In the women the mental factors predominated in manic-depressive, in depressed states, and in the dementia præcox-paranoic group, while in all the patients the mental factors predominated in but one group, viz., the depressed states. It was found, however, that in two other groups the mental and physical factors played an equal part, viz., the dementia præcox-paranoic group, and the manic-depressive group. (Paper published in full in the New York State Hospital Bulletin.)

## A STUDY IN RACE PSYCHOPATHOLOGY

G. H. Kirby, M.D.

The clinical material at the Manhattan State Hospital offers a good opportunity for work in the field of comparative psychiatry. The patients are all drawn from the population of New York City where a number of races of pure blood are found living in a fairly uniform general environment. The admissions of one year, comprising 1,403 patients, were analyzed in order to ascertain the frequency with which the various psychoses occurred among the different racial groups.

The Irish are clearly more prone to develop alcoholic disorders than any other one of the races considered, the proportion being double that found in any other people. They are also more liable to senile deterioration and other psychoses with organic brain disease.

The Jewish race seems practically free from alcoholic insanity. The Hebrew, however, ranks higher by far than any other race in the group of functional psychoses, made of manic-depressive insanity, dementia præcox, constitutional disorders and depressions of various form.

In the Negro, general paralysis occurs proportionately with more frequency than in any other race. Alcoholic disorders remain at a low figure. In the functional psychoses, particularly manic-depressive, the Negro ranks low.

The Germans are relatively high in general paralysis.

The Italians are low in both general paralysis and alcoholic insanity. They are higher in epileptic disorders, and furnish the largest percentage of unclassified cases.

The English rank slightly higher in dementia præcox than the Hebrew, but the small number of English people included in this study renders this figure rather unreliable.

The American group shows no striking figures when compared with other races, but manic-depressive insanity, general paralysis and alcoholic disorders reach a relatively high percentage in people whose parents were born in the U. S. (Paper published in full in the New York State Hospital Bulletin.)

Dr. Brooks stated that this is a very interesting subject; that some of Dr. Kirby's figures are very surprising and that others are what most of us have found. The fact that the negro has 29 per cent. of general paralysis was somewhat surprising to him. He had no idea it was so high and that they had such a low rate of alcoholic psychosis, because every one knows that with negroes the only reason they might have a low percentage is because they have not enough money to buy drink. They will drink all they can get. It would seem to be very well worth looking into.

With the other races he thinks his experience is just about what Dr. Kirby has found. He has had quite an experience with the Irish race in regard to their psychoses, and he thinks Dr. Kirby's figures are about like his own. He has found a great many alcoholic psychoses among them. He also has found quite a number of senile states. For some reason the dementia præcox does not seem to enter very largely into the Irish race. Just why he does not know.

Dr. Campbell said that one point which appears striking in the figures for psycho-neuroses is that the psychic causes appear to precipitate attacks much more rarely among the men than among women. In regard to the general statistics he thinks them very stimulating.

Dr. Russell was particularly interested in this presentation, because it may be said to be the first flower of the statistical work that has been undertaken in the State hospitals of this state for the first time this past year.

For the benefit of those who are not connected with the State service, it may be useful to explain that the study of statistical data has become a much more serious business in the hospitals than formerly, and these figures that we see presented to-night are the result of careful studies on each individual case. It is part of the work of the medical staff to prepare statistical data in regard to the cases as they are received. Those data are made the subject of discussion at the staff conferences, and as they finally appear they represent the best information and the best work that can be brought to bear on the cases. It is the intention of the state not only to publish statistical tables, but to publish the data in regard to each of the six thousand cases admitted during the past year, and to each of the cases discharged and to each of the cases with death.

These statistics to-night have been in some respects a surprise to him as well as to others, and it is very encouraging to think that we can at last go to the profession and public with figures that we can have some confidence in. He had already himself had a little experience in using the figures relating to the alcoholic psychosis in speaking to some rather influential Irish people, and they were plainly interested to learn that it was an absolute fact that in a very large proportion—much larger than in any other race—the cases of insanity in the Irish were due to alcohol.

He thought it would be interesting for some one to investigate whether syphilis does really prevail to any great extent among the Irish. Most people would have said that general paralysis was found among the Irish more frequently than the figures show. We know that the Irish as a race are especially noted for their sexual morality, particularly the women.

Dr. Meyer considered these papers as very important steps towards greater interest in etiological studies. He said that as Dr. Mabon has remarked, the mental disorders with only one cause are extremely rare, and we have to learn to work with combined causes, and naturally where combined causes enter into consideration, twice or three times, six times or ten times as much judgment and criticism must be applied as where we have but a single cause to consider. The result is that the data are rarely given, and unless we have some stock of observation, such as these tables present, it is very difficult to induce the staff of a hospital to maintain the necessary interest and attention. With these charts regularly

before the staff meetings, the etiological considerations are bound to become more definite. As a preparatory stage for more detailed etiological investigation such tables are absolutely indispensable, and therefore especially gratifying.

With regard to detail, the first question that he should like to ask shows very well just what he claims. What constitutes the psychic causes? You might specially ask what are the psychic causes—4½ per cent. in women—that have produced organic nervous diseases. How can an essential psychic cause produce a distinctly organic nervous disorder? Mental causes are those physical causes for which we have no other but psychological terms. But to recognize them as causes we must demand that they produce the claimed results with experimental certainty.

With regard to the alcoholic psychoses, it may be well to make a division of the Irish cases into Irish born and American born Irish. In the first attempt at such statistics that Dr. Meyer undertook with the Worcester Hospital material, he found that 50 per cent. of the men born in Ireland, who happened to be admitted to the *Insane Hospital*, had an alcoholic psychosis, whereas at the other extreme were the Massachusetts born individuals of Massachusetts stock with only 9 per cent.

He really feels very grateful to Dr. Mabon and Dr. Kirby for having brought these figures into referable form. A study of the causal indications will furnish the material for the study of prevention of psychoses.

Dr. Clark thought we must bear in mind that when we specify alcohol as an etiological factor that we are dealing with a complex cause. We know that antedating alcoholism, before any psychosis appears, there are complex sociological factors which may be responsible for the alcoholic excesses. A further analysis of the problem may show that the role of alcohol is not so great as it appears to be at first sight.

Dr. Putnam asked Dr. Kirby with regard to the Jews or other nationalities, whether there are any differences between those born in this country, especially the second generation, and those who came to this country as emigrants, as to their liability to develop psychoses.

He thinks we really need to know much more intimately the psychological groundwork before we can differentiate well between the mental and physical causes.

Dr. Diefendorf said that when he analyzed the Middletown material with respect to the psychoses appearing among the different races, he found that alcoholic psychosis was especially frequent among the Irish. He sent inquiries to several superintendents of Irish institutions, but they gave him very little data to help in explaining this high percentage of alcoholism. They emphasized the fact that the alcoholic psychoses came from certain sections of Ireland where the people were poverty stricken and poorly nourished. He also found that there was a large percentage of senile psychoses among the Irish. He explained this percentage on the ground that Irish emigrants came to this country about forty years ago, and it is now about time for the men who came in youth to this country and worked hard to break down in senile disorders. He found, too, that among the negroes there was a very large percentage of general paralysis. He inferred that this was due to the fact that syphilis was much more frequent among the negroes than other races.

Dr. Hoch was somewhat surprised to find in Dr. Mabon's table the mental causes of dementia præcox as frequent as the mental causes in

depressions, since in his experience the mental causes in the former are less clean-cut than in the latter. In depressions they are of the nature of causes which tend to produce some sort of an upset or worry in most people, whereas in dementia præcox they are more personal; therefore, less easily expressed in a few words, or by the usual terms of mental causes.

The question of precipitating mental causes is one that only can be understood if it goes hand in hand with the study of the personality, because only then does it become clear why certain causes produce such marked effects.

The high percentage of general paralysis found in the negroes agrees absolutely with what he found several years ago when he collected statistics on that point. Only his figures differ from those of Dr. Kirby's in the fact that the alcoholic psychoses in the negroes were also uncommonly high. This high percentage of general paralysis in the negro is very interesting. We know that syphilis alone does not account for general paralysis, and the fact that a race, which is suddenly thrown from simpler into more complicated conditions of life, should show such a marked increase in general paralysis is, as Kraepelin has pointed out, a very interesting fact, and one which throws an extremely important light upon the questions of causation and the nature of general paralysis.

Dr. Hirsch was not surprised to see a high percentage of alcoholic psychoses among the Irish, but he was surprised to find that the percentage is so low among the Jews. In the cases which he had seen at the Mt. Sinai Hospital alcohol has appeared to him to play a considerable role in the etiology of the neuroses and psychoses. He had seen within three months five cases of optic atrophy in Jews due to wood alcohol. General paralysis is frequent among the Jews, but he should expect to find a considerable difference in this respect between the Jews who are born here and those who have come as emigrants.

Dr. Mabon said, in reference to the psychic causes of the organic diseases, that there were four cases. Of these, two belonged to the senile group and two were general paralytics. One of these cases he recalled occurred as a result of bereavement, and, as we all know, this is oftentimes a constantly acting cause. The senile cases were in women who were not supposed to have reached the period of life when they should have been senile, but this condition came on as a result of constant worry and anxiety. As the clinical picture was that of senile psychosis, there was nothing else to be done but to place them in this group. He was glad for the sake of discussion that this has attracted attention.

In the contribution to-night they had simply tried to designate the precipitating factors. Undoubtedly a number of causes exist in practically all cases, but there were certain precipitating factors which had the greatest weight. Up to the present time he knew of no study that had been made, in this country at least, as to the causes found in the different groups of the psychoses. Heretofore their study has been the causation of insanity itself, without any reference to any particular form.

The only way that we can get at the precipitating factors for the different groups is through careful study of the histories.

These notes were started as the result of the introduction into the state hospital system of a new set of statistical tables which were prepared by Dr. Russell, Dr. Meyer and Dr. Hutchings. This committee and the state hospital superintendents realized the fact that the statistical

tables then in use did not have enough practical bearing on the subject. The first efforts, of course, in a new work, are not as satisfactory in results as later ones. We naturally see the mistakes which we make in the first year or two and try to benefit by that experience. In the future, therefore, they would try to bring out more clearly the actual conditions, but it seemed to him that certain things stand forth in that table very prominently:

First, there are four groups in which the physical causes exercise the same influence among both the men and the women, viz., the organic, the toxic, the infective-exhaustive and the psycho-neuroses and constitutional inferiorities. When we consider the fifth, the manic-depressive, we find that among the men the physical is in the fifth place, whereas in the women it is sixth. On the psychic side of the question we find that the women predominate. It will be noticed that the table states that for men it is thirteen per cent., whereas for the women it is thirty per cent. That is, thirty per cent. of five hundred and nineteen women, and thirteen per cent. of four hundred and forty-two men. This must mean something.

Second, take the question of alcohol which was referred to by Dr. Clark. They knew that it is a very complex question, but they knew also as a result of their observation that nearly twenty per cent. of all the patients admitted had an alcoholic psychosis. This is nearly one-fifth of all the cases that came to the institution, and here in this number they had a definite history with alcohol as a basis and with the clinical picture of a psychosis due to alcohol. They knew, therefore, that it caused insanity in that number of cases, although they did not necessarily know what particular part it played in it.

He was very glad that the papers presented have called forth so much discussion and it seemed to him that as they progressed in this work, they would be able to bring out additional facts of value.

Dr. Kirby said several reasons might be advanced as to why the Irish should be especially predisposed to develop alcoholic insanity. In New York City, for instance, the Irish control to a large extent the liquor traffic. We might think that the occupation, in a way, rendered these people more liable to develop this form of psychosis. He did not find any striking difference in the percentage of alcoholic insanity among native born Irish and among their children born in America.

## THE NEW YORK PSYCHIATRICAL SOCIETY

March 3, 1909

The President, DR. AUGUST HOCH, in the Chair

### MULTIPLE MELANCHOLIA

By C. L. Dana, M.D.

Dr. Dana described a group of cases belonging to the manic-depressive class, but characterized by short, frequent and perfectly regular attacks of depression, alternating with normal or slightly exalted states of equally long duration.

He reported in detail a typical case in which a man aged 61 had 44 attacks in the previous eleven years, each attack being about four to six

weeks in duration. The general features were those of mild depression, abulia and retardation, with various associated symptoms which led to a diagnosis of neurasthenia. Another patient was then in his forty-sixth attack, having had about two a year of 12 weeks' duration, for 22 years.

During these illnesses both patients had kept at their business and accumulated large fortunes. Other patients had had somewhat longer attacks, *e. g.*, six months. The patients in these latter cases had somewhat severer depression.

The characteristic of the psychosis, however, was its relative mildness, its rhythmical occurrences without normal interval, or else with an apparently normal interval of exactly the same length as the depression.

Careful laboratory studies of the flora and fauna of the digestive tract and of the urine had so far failed to show any characteristic change in the metabolism or any toxemia.

Every kind of therapeutic resource had been tried to break up the seizures, but without result. The author thought that there was a fruitful field for pathological and therapeutic study in these cases. Probably many cases of recurring "neurasthenia" belonged really to this psychosis.

Dr. Brooks said he thought that every one who has had to deal with these cases has little hope of benefiting them by treatment. He had examined the urine of many such cases, and there has always been a defective output of urea which merely shows faulty metabolism. In regard to the heredity influence, it has been his experience that it has been a factor of importance.

He recalled a case of a young woman, which also brings out another point that Dr. Dana mentioned. Her father was a man who suffered from attacks of depression. The daughter had the first depression about three weeks after her marriage and one every year afterward. She has had about fourteen. One year Dr. Brooks suggested that she go back to her old home and live there a whole year. That year she had no attack.

Dr. Clark said as is well known, the underlying cause of the bad prognosis of recurrence in these manic-depressive psychoses is the neuropathic constitution and the defects in the personality. The latter may be changed although less so in the non-plastic decades of life—the third and fourth decades of manic-depressive occurrence. However, much may be done even here. To strive to change the whole life of the patient by removing him from the city to the "simple life" in the country is after all but to take a very narrow view of the reconstruction of personality needed. Patients should have their fundamental processes of thought re-adjusted in that life they ordinarily live. The whole principle of re-education is a slow process, but one worthy of most earnest attention. Emotional motives of religion, sex and love are of course the easiest to use, but intellectual and humanitarian instincts are not to be neglected in the more intelligent. Personally re-education has yielded some surprising results in the speaker's experience with juvenile epileptics, especially in avoiding the relapses after cure has once been established. This work led him to try the same principles in several of these mild manic-depressive cases with satisfactory results. Metabolic defects should not be neglected, but he thought their presence was often over-emphasized in the real pathogenesis of the manic-depressive disorder. Certainly sole attention to mal-nutrition and so-called autointoxication does not radically alter the cycle of recurrence of these mild manic-depressive psychoses.

Dr. Cotton was much interested in the measures taken to alleviate any physical condition or abnormalities found in these cases. He thought it a rather important point that these various things were done without any resulting influence on the attacks.

Dr. Bailey said it seemed to him that possibly the expression "fluctuation" is a better one than instability to characterize these cases of melancholia. We are all subject to fluctuations; states of well-being, followed by states of more or less discouragement. And especially when one is in a state of discouragement if any outside factor comes in that state is accentuated, and in cases predisposed by heredity, or for other reasons, the ordinary normal depression may pass into a more or less well-defined and extended depression. Then if the person who is abnormally fluctuating in his feelings be overtaken by any one of a hundred different disharmonies, say digestive, cardiac, pulmonary, or others, his depressive fluctuations will be made still more pronounced until it culminates in a definite melancholia.

One set of causes Dr. Dana did not mention which deserves more notice than it gets in text-books, and that is the psychic elements. Some years ago Dr. Bailey had an opportunity of seeing a number of men who had been subjected to very severe criticism in newspapers, and who had been made very unhappy. He had three in mind who had no history of predisposition to mental disease, but under the stress of these painful emotions they all developed periods of depression lasting over seven months. In one case the patient developed definite delusions. That is one class of psychic causes occurring in people who are not predisposed. When Dr. Bailey read the title of Dr. Dana's paper he thought of a case which he had seen recently, but which he did not have opportunity to study as carefully as he should like. He made inquiry if some of these cases of recurring melancholia, by which he understood repeated attacks in one individual, none of the attacks being of great severity, could not be explained on a purely psychogenic basis.

He remembered a case of a woman who had a perfect Freud sexual trauma in that rape was attempted upon her by a coachman at eight years of age, and she had been very psychasthenic all her life. Dr. Bailey saw her in one attack recently in which for three days she would not speak, did not sleep at night, became very slow. Then she became all right again. He thought that in this case the same psychogenetic cause which had started periods of depression formerly caused that attack. He supposed only a small proportion of cases of melancholia can show any satisfactory psychic cause, but it is a source of sufficient importance to be worthy of investigation in all the cases.

Dr. Knapp said the victims of emotional fluctuations do not ordinarily consult physicians, but he had known fairly intimately a considerable number of people who admit fluctuations of a depressive character, where the depression, as Dr. Bailey has suggested, very often arises from psychical influence, but the reaction is considerably greater than the psychical influence itself would warrant. A person perhaps would start a certain amount of worry and depression, which was enough to be disagreeable and cast a sort of ultra-marine hue over life for two or three days for some trivial financial worry that did not amount to more than five or ten dollars. These conditions are fairly frequent, at least he had known a considerable number of people who have admitted them very frankly, saying that

they had these fits of depression lasting sometimes for a day or two, sometimes for a number of days or weeks, but never leading to any conditions serious enough to interfere with appetite or with sleep or with power to work. In some instances he had known people to admit that during these depressed stages the appetite was perhaps a little below par, or they did not sleep quite so well, were apt to wake earlier in the morning or perhaps lie awake for a time in the middle of the night. In one of these instances a physician described to him some rather interesting points bearing upon the question either of fatigue or nutrition.

This physician admitted that he was subject to these periods of depression and anxiety, that he would get along fairly well during the day with perhaps a trifling increase the last of the forenoon. He would note a little exacerbation in the worry, especially in the afternoon, for an hour or so before dinner. With the influence of the dinner, the depression would be very materially lessened and then late in the evening it would be apt to come on again as if the depression were influenced by hunger and by fatigue. These normal emotional variations, which are pretty common, should be considered more than they are in reference to this whole subject of recurring melancholias. Recurrent melancholia is an exaggeration of the condition which obtains in very many, if not in most healthy people, and the cause is to be sought perhaps not wholly in the psychical side, although psychical influences may be responsible for the genesis of the immediate attack; metabolic changes may also be responsible for the genesis of the condition, but the reason why the person develops these more pronounced melancholic states in place of the normal depressions, rests perhaps on some special nervous or physical development of the individual.

Dr. Mabon said in the hospitals we get many cases of recurrent melancholia, but of a more severe type than described by Dr. Dana. In the study of the cases which he presented to this society at the last meeting, he found that in manic-depressive insanity the psycho-genetic factors were greater than the physical factors and that it was the only form both among the men and among the women, where the psychical factors were greater than the physical. It was particularly marked among the women, and among the men the average was, 47 per cent. psychical and 48 per cent. physical, the balance being combined causes.

There is one other thing we must bear in mind in reference to these repeated attacks, that is, after patients have had one or two attacks they are more predisposed and slighter causes will then operate.

Dr. Brill thought that most of the mild depressions described by Dr. Dana would come under the headings of psychasthenia and hysteria, and in such cases psychic factors play a greater role than physical ones.

He had in mind three cases, all of which showed depressions similar to those described by Dr. Dana. One case, a woman of 42, had six depressions which came once a year at about the same time. It was at first thought that she suffered from the depressive type of manic-depressive insanity, but on more careful examination it was found that she was hysterical. She stated when examined that the attacks generally lasted from six to eight weeks and that an attack was just coming on. He made a psycho-analysis and found definite reasons for her first depression which manifested itself six years ago and repeated itself at the same time each year. After a week's treatment by psycho-analysis the depression disappeared.



Such cases lead him to think that in such depressions psychic factors play at least as important a part as physical factors, and that if we should pay more attention to psycho-analysis, or at least as much attention as we pay to glandular secretions, etc., we could do considerably more for the patients than we are doing at present.

Dr. Hoch agreed with Dr. Dana that his cases belong to the general class of manic-depressive insanity. Only he was rather surprised that the symptom which almost always characterizes these cases, namely, the feeling of inadequacy, which represents the mildest form of retardation, was not specially mentioned. It is an interesting fact that in a large percentage of cases who have many attacks of manic-depressive insanity, the intensity remains at about the same level, although we do find some patients who usually have mild attacks and then suddenly develop an attack of greater intensity, but as a rule this is not the case. In the causation of these cases the most important factor is a certain make-up, and in his studies he had found that the cases of depression often show a definite depressive cause in an individual who has a depressive constitution. Undoubtedly physical precipitating causes occur, for example, childbirth, but the fundamental disorders are certainly not of the nature of grosser metabolism disorders. This has been definitely shown by Folin in his studies in which the diet was accurately known.

As to the treatment, he entirely agrees with Dr. Clark, namely, that a regulation of habits is necessary. He should urge a special study of personality and of the precipitating causes and the regulation of habits to be guided by the results thus obtained.

Dr. Dana agreed with Dr. Diefendorf that the name used is not a very good one, and he was quite willing to drop it. He thought that it would be well to have a special qualifying term for a group of cases which offer special opportunities for studying because they come to the general practitioner probably as much as they do to the neurologist or the alienist. He used the term "melancholia" because they come to us for their melancholia. None of these cases consider themselves sick when they have the manic phase on, and during that phase he did not think they are really sick, for it is during that time that they do their active creative work. None of the patients call in a doctor during their manic phase.

As to the period of development, more of the cases develop in the third and fourth decades, one patient was only twenty-six, but as a rule they develop after this time.

Dr. Dana thought that the discussion has brought out a very interesting point in connection with psycho-genesis and has made it very evident that there is another group of minor depressions of psychogenic origin of the psychasthenic type.

As regards the treatment, he did not read what he had written about this, but it would confirm what Dr. Clark has said, and also confirm the points that were made as to the fact that there are some psychogenetic factors in the cause. The only thing that does help these cases is absolutely to change their environment and mode of life and insist upon their living in an absolutely simple, natural way, free from any worry and excitement, living out of doors for a long period of time. He had one patient who is cured, but it took him nearly four years of abandonment of his business. It is a pretty hard prescription for an active, successful business man, or a mother of a family, to be asked to clear out and live

in the woods for three years, and that is about all the therapeutics that we can offer at the present time. One purpose of his paper was to suggest we stop, for a little, studying symptoms and see if something cannot be done to help these cases practically.

## COMPARATIVE PSYCHOLOGICAL STUDIES OF THE MENTAL CAPACITY IN CASES OF DEMENTIA PRÆCOX AND ALCOHOLIC INSANITY

By H. A. Cotton, M.D.

Investigators in the field of abnormal psychology experience great difficulty because of the lack of methods that can be applied to the normal as well as the abnormal. Kraepelin, after experimenting for years, has evolved a method which is adaptable to both normal and abnormal individuals, rendering it possible to compare results. The method is simple addition of single numerals, 1 to 9, for a period of ten minutes daily for ten days, five days with a pause of five minutes between two five minute periods of mental work.

By this method, fatigue, mental capacity, impulse and intensity of will, the effect of rest, and the effect of practice, in the various psychoses can be shown, and clinical symptoms explained and graphically represented. This investigation was carried on under the direction of Prof. Kraepelin at the Psychiatric Clinic at Munich, and the classes of cases used were dementia præcox, alcoholic insanity, and normal individuals of the same grade of intelligence and education as the patients. In all fourteen cases of alcoholic insanity, including several cases of delirium tremens, chronic drinkers and acute hallucinosis, also twelve cases of dementia præcox were investigated. The figures and results of twenty-six normal individuals investigated were used for comparison.

Curves made from the average of the ten days' work, in each case the unit being the number of additions during each minute, show the peculiarities in each case, also similarities in each class of cases. The results show some striking differences between the three classes. The most important feature was the difference in fatigue or "fatiguability" between the three groups. In the alcoholics, as would be expected from previous investigations, the fatigue was greater than in normal persons, while in dementia præcox it was very small. In the majority of the latter it was a negative quantity, which was peculiar to this group alone.

A period of rest was very favorable to both normal and alcoholic persons and recuperation was marked, more so in the latter group. In dementia præcox the rest was very unfavorable, as there was no marked fatigue, no recuperation or compensation took place, and consequently the patients in the group lost by having a period of rest introduced, so that the work done after the rest was less than the work done before.

The absolute mental capacity varied but little in the three groups, being somewhat less in dementia præcox, a fact that is borne out by clinical experience.

The disturbances in the field of will were most marked in dementia præcox, a well-known clinical fact. It was shown graphically wherein the will differed in the three groups. The intensity of the will was much lessened in dementia præcox, and the initial impulse was also less than in

the other two groups. This was shown by a sudden drop in the work curve after the two or three minutes, although these patients worked continually, and showed apparent interest. Still, they could not continue the work at the pace at which they started. Other curves showing the absence of fatigue, proved that this factor could not be held responsible for the sudden drop of the curve. They were unable to make the effort that was apparent in the alcoholics and normal persons.

The variations in the will were also shown in the curves representing the daily increase, due to the effect of practice. In the alcoholics and normal persons there was a steady increase, marked at first, but not pronounced during the latter days of the experiment, but in dementia præcox, the average daily increase was very small, and the curve representing the effect of practice showed marked fluctuation, and often a dropping off in amount of work done the last days, compared with the first days. This was accounted for by the lack of interest and difficulty in making any extended effort for any period of days consecutively. The interpretation of the various curves is a very difficult problem, and Prof. Kraepelin deserves the credit for this part of the work.

Dr. Knapp did not get clearly in his mind the particular types of alcoholism that were used in these experiments. He thought it is rather an important matter, of course, as to whether they were the confused type or the more delusional type.

Dr. Cotton said there were several cases of chronic drinkers who had recovered from delirium tremens; others were alcoholic hallucinoses; all of them belonged to the chronic types of alcoholism; some had delusions.

## NEW YORK NEUROLOGICAL SOCIETY

April 6, 1909

The President, DR. J. RAMSAY HUNT in the Chair

### ASPECTS OF THE PHYSIOLOGICAL PATHOLOGY OF BRAIN TUMORS

By Harvey Cushing, M.D.

In introducing this subject, Dr. Cushing laid stress on the misconception as to the rarity of brain tumors, and he expressed the belief, in accord with that of Oppenheim, that the brain was one of the most frequent seats of tumor. In an early stage, unfortunately, the lesion was rarely recognized, and indeed, was too often overlooked when the symptoms were full blown.

The percentage of cases of brain tumor admitted to the surgical service of the Johns Hopkins Hospital had risen from .06 per cent. in the first 5,000 admissions after the opening of the hospital in 1889 to 1.3 per cent. in the last 3,000 cases.

Under a discussion of the general in contradistinction to the local effects of a tumor, the physiological interpretation of the usual pressure phenomena was undertaken, particular stress being laid on the source of the intracranial discomforts and upon the nature of choked disk. Experimental and clinical studies in regard to the character of the latter lesion had led to a firm belief in its mechanical origin. It was urged, in order to avoid

confusion from the designation optic neuritis, that Clifford Albutt's term choked disk be retained and be understood to cover all grades of the process, from the early hyperemia of the disk to the terminal process of atrophy.

Careful perimetric observations, made in conjunction with Dr. James Bordley in a long series of tumor cases seen at an early stage, had led to the discovery that inversion or interlacing of the color fields was one of the most striking and characteristic symptoms of an early stage of pressure from tumors, and it was one of the first things to disappear after removal of a tumor, or even after a successful palliative decompression. This was an important matter, in view of the supposed association of this phenomenon with hysteria.

The direct effects of a tumor upon the adjoining cerebral substance was fully discussed, the opinion being given that tumors, even gliomata, were much more apt to involve neighboring paths by pressure than to destroy them by invasion. Particular stress was laid upon dislocation of the cerebral substance and upon the importance of dislocation as a therapeutic principle as applied to the modern operation of decompression. Under pressure the cerebral substance tended to protrude through any opening in the skull, and there being normally an opening at the foramen magnum, any increased tension, particularly when it was primarily exerted under the tentorium, tended to crowd the lips of the cerebellum and the bulb into the foramen magnum. It was for this reason that lumbar puncture might be a source of great danger in cases of brain tumor, particularly in subtentorial growths. A number of illustrations were given of the sudden death which might result from this supposedly harmless measure.

Under the local effects of tumors attention was called to the recent advances in our knowledge of the hypothesis cerebri, and to the successful operations which had at many hands been employed to relieve tumors or hypertrophies of this gland. A report was made of a successful operation for acromegaly, with a result which tended to demonstrate conclusively that the disease was due to hyper-function of the gland rather than to a diminished activity, as some had believed. In further discussion of the local disturbances resulting from a growth the urgent need of early diagnosis was again referred to, since symptoms at a distance which so easily masked the exact situation of the lesion were so often present when the malady had far advanced that an accurate localizing diagnosis might be difficult or impossible.

Having discussed what the tumor did and where it lay Dr. Cushing concluded his remarks with a discussion of what the tumor was, and referred to the difficulties of a histological diagnosis and to the necessity of studying the lesions in their relation to the brain by hardening the structures *in situ* before their removal, and by complete sections of the entire cerebrum inclosing the growth, as had been so successfully carried out by Dr. Adolf Meyer. Special attention was called to the frequency of degeneration in what were supposed to be the most malignant tumors, the gliomata. Illustrations were given of the total or partial metamorphosis of these growths into cystic cavities, which offered a most favorable form of lesion for successful surgical treatment.

The correlation of the preliminary exact neurological examination of the subsequent surgical procedures and of careful postmortem studies of the tissues, by the same individuals, would be necessary before great strides could be made in our understanding of these common lesions, which were

frequently overlooked, and which in the past had erroneously been regarded as practically outside of any possible successful therapy.

The points brought out in the paper were abundantly illustrated by lantern slides.

Dr. M. Allen Starr said that so many points had been touched upon in Dr. Cushing's excellent paper that it was almost impossible to know where to begin to comment upon them. In the first place, he was interested in the microscopical demonstration of the fact that choked disk was due entirely to an accumulation of fluid in the nerve sheath. That fact, Dr. Starr said, he had believed for many years, and his belief had been strengthened by his experience with successful operations for brain tumors, where it was evident with the ophthalmoscope that the choking had disappeared rapidly after decompression, and that the blindness was only temporary in character. He recalled a case which was operated on for him in Baltimore by Dr. Keen of Philadelphia, where the patient recovered his sight within two weeks after the operation.

Another interesting point brought out by Dr. Cushing was the reversal of the color field as an early symptom of brain tumor. To him, Dr. Starr said, this was perfectly new, and it might prove of the highest diagnostic value, particularly in obscure cases. He had under his observation at present a case in which the diagnosis rested between chronic lead poisoning and brain tumor. The man had a distinct lead line on the gums and at the same time had certain symptoms pointing to tumor of the brain.

The speaker said that Dr. Cushing had wisely emphasized the fact that pressure symptoms were absent in certain cases of brain tumor, especially those of the frontal lobe. The vast majority of pressure symptoms, *i. e.*, headache, vomiting, nystagmus and choked disk were due to secondary accumulations of fluid within the ventricle rather than to the tumors themselves. In cases where the tumor was so located as not to cause any obstruction to the free circulation of fluid through the ventricle, and where there was consequently no production of an internal hydrocephalus, there was a marked absence of so-called pressure symptoms. As an illustration of this fact the speaker recalled the case of a brain tumor occurring in one of his intimate friends with whom he had been closely associated since childhood, and whose characteristics were therefore so well known to him that any change would have been quickly noted. In that case the presence of a brain tumor was suspected for three years, but the positive diagnosis could not be made, and he showed certain symptoms that were suspicious of general paresis. This patient never had choked disk up to the time of his death; he never vomited and had very little headache. He had no focal symptoms and within a week of his death he went to the theater and apparently enjoyed the performance. At the autopsy the entire right frontal lobe was found infiltrated with an extensive glioma.

Another interesting point brought out by Dr. Cushing was in connection with the protrusion of the base of the brain into the foramen magnum. This threw light upon a case which had hitherto always been extremely obscure to him. The case was that of a young girl with a typical cerebellar tumor who was sent to the Presbyterian Hospital for operation. On the day before operation, while examining her for the last time, and while sitting up in bed, she suddenly ceased breathing. Artificial respiration was kept up for fifteen hours, and until every member of the hospital staff had become thoroughly exhausted, but without avail, death being due to respiratory failure. In the light of Dr. Cushing's explanation, her death

was probably due to the tumor impinging upon the cerebellum and forcing it downwards. In such a case the twelfth pair of nerves would probably be the first to feel the pressure and the question arose whether disturbances in speech or fibrillary twitching of the tongue might not be a preliminary sign of beginning protrusion of the tumor downwards through the foramen.

In regard to erosion of the bone resulting from long-continued pressure of brain tumors, Dr. Starr recalled a case seen at the New York Hospital in which a tumor was suspected, but it could not be located. The autopsy revealed a tumor in the right parietal region, lying half an inch beneath the cortex, and the bone itself had become eroded to such an extent that it was reduced to the thickness of an ordinary sheet of paper. The man had had tenderness and some pain in that region, and there had been a moderate degree of choked disk, but no blindness.

Dr. Starr said he agreed with Dr. Cushing in regard to the unsatisfactory character of the pathological reports in some of these tumors. In support of that statement he said that on March 26, 1908, a large tumor of the brain had been removed for him by Dr. Hartley, from a case at the New York Hospital, and the character of that growth still remained practically unknown. The tumor occupied the left inferior parietal lobule and was located fairly easily by the occurrence of focal epilepsy, and subsequently a slight degree of aphasia. On exposure the tumor looked like a mass of transparent white wine jelly and up to the present time the pathologists had been unable to decide as to its character. The growth was successfully removed and the patient still remained in fair health.

In concluding his remarks Dr. Starr expressed the belief that much of the pathology of brain tumors was still unwritten. He called attention to the fact that after the removal of these growths recovery from severe local symptoms frequently occurred to an astonishing degree. He asked Dr. Cushing whether he had ever located a center for the trunk in his experimental stimulation of the centers in the anterior central convolution. In one case operated on by Dr. Hartley, while endeavoring to find the shoulder center, they located a limited area just between the arm and leg centers, stimulation of which produced a spasmodic turning of the trunk.

Dr. George E. Brewer said that after Dr. Cushing's illuminating demonstration of the physiological pathology of brain tumors, and his description of the reversal of the color fields as an early symptom of that condition, it seemed that in the future an earlier recognition of these growths must follow. The speaker said it had been his privilege on several occasions while in Baltimore to visit Dr. Cushing's clinic, and he had admired the care with which these operations were undertaken and the technical skill with which they were executed.

Dr. Charles A. Elsberg said he had seen two cases of sudden death result from the protrusion or jamming of the cerebellum into the foramen magnum. In both cases lumbar puncture had been done. In another case where a decompression operation for cerebral tumor had been performed, the patient, while sitting up in bed, fell backwards and expired soon afterwards. The postmortem showed a brain tumor, the pressure of which had jammed the medulla downwards into the foramen magnum. Since that time, Dr. Elsberg said, when doing lumbar puncture on a patient with suspected brain tumor, it had been his practice to have the patient lying with the head downward, in a marked Trendelenberg posture,

thus doing away with the force of gravity. Since adopting this plan he had had no further accident of this kind.

The speaker said we were indebted to Dr. Cushing for the fact that operations for brain tumor were not as long delayed now as formerly, and perhaps the greatest advance that had been made in brain surgery was the result of the impression made upon the general profession by Dr. Cushing's statement that in cases of brain tumor it was better to do the decompression operation first and give the iodides afterwards rather than to try the anti-specific remedies first, thereby losing valuable time, and delaying the operation until, perhaps, the patient was almost blind.

Dr. B. Sachs said that while it had been his practice for sometime past, in cases of suspected brain tumor, to have the color fields tested, he had not attributed the importance to them which Dr. Cushing has given to them, but he has no doubt that Dr. Cushing's ideas are correct and are well worth testing. Dr. Cushing's propositions regarding the pituitary body are of unusual interest and importance. The speaker wishes, however, to call attention to the fact that he has had several cases in which in the latter stages the symptoms of brain tumor were dominated by those to be attributed to involvement of the pituitary gland. Such symptoms could be of the order of indirect symptoms and might, therefore, lead to incorrect inference as to the exact site of the tumor. In a recent case the diagnosis of involvement of the pituitary body was made, but at autopsy the tumor was found in the ponto-cerebellar angle. The pituitary symptoms must have been due to indirect pressure.

Dr. Sachs said that he agreed with Dr. Cushing in regard to retaining the term *choked disk*, and he was also pleased to hear what the speaker of the evening had to say regarding the blocking of nerve conduction, and that the symptoms of brain tumor were not necessarily to be attributed to destruction of tissue. The remarkable recoveries which Dr. Sachs had noticed after the removal of tumor could only be explained if these views were accepted. He was also in entire agreement with Dr. Cushing regarding the danger of sudden death after lumbar puncture, more particularly in cases in which there was any possibility of a neoplasm in the cerebellum or in the lower portion of the brain axis. Lumbar puncture has become such a popular procedure that it was wise to call attention to the possible dangers. In several cases of cerebellar neoplasm in which it was desirable to do a lumbar puncture, Dr. Sachs was most careful to withdraw the spinal fluid carefully and to elevate the bed or table, thus putting the head lower than the feet.

Dr. Adolf Meyer said that in a case of tumor in the Sylvian fossa and sudden death after lumbar puncture, Dr. Lambert at the Psychiatric Institute on Ward's Island demonstrated a forward dislocation of the pons with disastrous effect on the circulation of the tegmentum of the mid-brain through interference with the posterior perforating vessels. Hence it was not alone in cerebellar tumors that we had to be very careful in regard to the quantity of fluid withdrawn.

Dr. Cushing, in closing, replying to Dr. Starr, said he had an impression that the center for the trunk was well down in the central fissure, and that on account of its location the opportunities for stimulating it did not often present themselves.

SOME RECENT INVESTIGATIONS ON THE OPTIC THALAMUS  
BY A NEW METHOD

By Ernest Sachs, M.D.

Dr. Sachs gave a lantern slide demonstration of his findings, and of the Clarke Stereotaxic Instrument, by which they were obtained. As the result of his investigations with this new method, he offered the following conclusions:

1. That the hypothalamus is essentially distinct from the thalamus, but is closely connected with the globus pallidus.

2. The thalamus must be regarded as consisting of an inner and outer division, of which the inner includes the nucleus anterior and nucleus medius.

3. This inner division is associated with the nucleus caudatus and rhinencephalon.

4. The outer division is the end station of the fillet and superior cerebellar peduncle. It is closely connected with the Rolandic area.

5. From excitation experiments, as well as the anatomical facts deduced from localized lesions, the inner and outer divisions of the thalamus seem to be in the main independent structures.

6. The excito-motor area in the monkey and cat is connected with the lateral nucleus of the thalamus.

7. The thalamo-cortical fibers connect the lateral nucleus with the cortex and are arranged dorso-ventrally, so that those fibers for the face are ventral and those for the limbs are dorsal.

Dr. Adolf Meyer said it was a source of great satisfaction that at last experimental methods of undoubted merit had become available and been utilized to study this extremely inaccessible region of the brain. In connection with Dr. Sachs's paper, which, because of the condensed form in which it was presented, Dr. Meyer said he would not undertake to discuss, the speaker exhibited a glass model of the thalamus in which the anatomical arrangement of the fibers and the various nuclei were very well represented. Referring to the Gudden method, he thought that perhaps the possible accidents attending its use had been exaggerated, as there seemed very little chance that a disturbance of the cortical circulation should affect such well-defined districts as those in the thalamus. Non-vascular atrophy had been amply demonstrated in connection with many cortical lesions.

Dr. Ernest Sachs, replying to Dr. Meyer's reference to the Gudden method, said it had recently been shown that some of the vessels supplying the cortex also supplied part of the thalamus, and that at least in some instances, by cutting off the cortical circulation we also cut off the blood supply to the thalamus, and in this way produced degeneration of some of the nuclei.



## CHICAGO NEUROLOGICAL SOCIETY

April 22, 1909

The President, DR. L. HARRISON METTLER, in the Chair

### REPORT OF A CASE OF INFLUENZAL MENINGITIS

By David J. Davis, M.D.

The interesting features of the case may be summarized as follows: A purulent cerebro-spinal meningitis occurred in an infant four days after birth and also very probably in his twin brother. Clinical signs of meningitis were not prominent. Death occurred after four days and at necropsy the influenza bacillus was found in pure growth in the meningeal exudate and peritoneal cavity, but not in the heart's blood. The atria of infection usually inspected in these cases were normal, namely, the tympanic cavities, nasal cavities, throat and lungs. An acute enteritis existed, which may have been the origin of infection. There was no evidence of influenza infection in the mother or other members of the family.

The literature has been thoroughly reviewed recently. Adams<sup>1</sup> in 1907 tabulates 21 cases in which the influenza bacillus was isolated from the meningeal exudate in pure culture. Cohoe<sup>2</sup> this year finds 25 cases, including one of his own, and gives an analysis of the important features.

Dr. L. Harrison Mettler said that Dr. Davis stated that this form of meningitis seems to be characteristic of children, and yet general influenza without meningitis seems to be most common in adults. Is there any comparison between the number of cases of influenzal meningitis in children and influenza without meningitis in children? We usually think that meningitis is particularly prone to complicate the infections characteristic of childhood. There may be a parallelism. However, influenza occurs rarely in children, whereas meningitis is comparatively frequent. In the adult the opposite is true.

Dr. Peter Bassoe requested that Dr. Davis say something about the proof of the influenza bacillus being the cause of influenza, as he has done much work along this line for several years.

Dr. Davis said, Pfeiffer, in 1892, announced the discovery of the influenza bacillus in epidemic influenza. Following this announcement much work was done by the Germans to substantiate this statement. However, for several years it was impossible to find this organism in a large proportion of cases of epidemic influenza, so that many workers doubted the specificity of Pfeiffer's bacillus as the cause of influenza. The French never believed in this specificity. It was also found that Pfeiffer's bacillus could be isolated in many cases of whooping-cough, measles and scarlet fever; in fact, it frequently was the predominating organism in the sputum. It has never been found in the blood, however, except in two or three cases of endocarditis. A study of epidemics of influenza in which the cases were typical disclosed a variety of organisms, such as the micrococcus catarrhalis, the streptococcus, pneumococcus, etc. Occasionally, the influenza bacillus is found. Dr. Davis had occasion to examine a number of cases that occurred during the epidemics of 1905 and 1908. The cases were typical clinically, and yet in 1905 Dr. Davis

<sup>1</sup> Adams, Archives of Pediatrics, 1907, 24, p. 721.

<sup>2</sup> Cohoe, American Jour. of the Med. Sciences, 1909, 137, p. 74.

found the bacillus in only about 15 or 18 per cent. of cases examined, and last year found it in about 20 per cent. of the cases. As a rule the streptococcus is present in large numbers, so that there can be no question that the cases ordinarily called grippe are not due to Pfeiffer's bacillus. Pfeiffer's bacillus is also found in normal throats, so that the question arises whether it is of any significance as an etiologic factor. There can be no question about the pathogenicity of the germ; the case Dr. Davis reported is an instance in point. He has taken the organisms isolated from the sputum of cases of pneumonia and whooping-cough, transplanted them on the tonsils of normal persons, and obtained constitutional symptoms, so that the organism is not a saprophyte in all conditions.

Influenza is not common in children and there is absolutely no relation between the occurrence of influenzal meningitis and epidemics of grippe.

### THE WASSERMAN TEST, WITH SPECIAL REFERENCE TO ITS APPLICATION IN NERVOUS AND MENTAL DISEASES

By F. G. Harris, M.D. (By invitation)

The Wasserman reaction is an application of the principle discovered by Bordet and Gengou, *i. e.*, that a suspension of bacteria when mixed with the inactivated serum of an animal previously made immune to that bacterium would bind complement. This reaction was rapidly taken up by dermatologists and syphilographers, and as a consequence our ideas of the various phases of syphilis have been markedly altered.

The five factors that we deal with are (1) antigen, (2) antibody, (3) complement, (4) hemolytic amboceptor, (5) red blood cells.

The technique is complicated and requires careful work. All sera must be tested against normal and syphilitic sera. In the absence of our ability to grow the spirochete an alcoholic extract of a liver of a syphilitic infant is used.

In spite of the fact that the hypothesis on which the serum diagnosis was founded has been shown to be false, it would be wrong to assume that that fact lessens the value of the reaction.

A positive reaction is not found in any other disease except trypanosomiasis, durine, frambosia tropica, some cases of leprosy and possibly some cases of scarlet fever.

The following reports show the immense value of the Wasserman reaction in neurology, especially in regard to paresis:

Wassermann and Plaut (early work) ..	54 cases	90.7% positive.
Morgenroth and Stertz.....	8 cases	100 % positive.
Marie and Levaditi.....	30 cases	93.3% positive.
Ravault and Petit.....	72 cases	93 % positive.
Stertz .....	45 cases	97.9% positive.
Edel .....	22 cases	95.5% positive.
Meier .....	39 cases	100 % positive.
Plaut .....	44 cases	100 % positive.
Lesser .....	37 cases	100 % positive.
	351 cases	97.8% positive.

Of 1,188 cases of paresis collected from the literature 96.5 per cent. showed a positive reaction.

There seems to be little difference in regard to the duration of the disease, as early cases show the reaction as well as advanced ones. The reaction is especially useful in differentiating paresis from mania, imbecility, senile dementia, Korsakoff's psychosis, neurasthenia, etc.

The results in tabes are not so striking.

Citron reports 15 cases.....	80 % positive.
Fleischman reports 16 cases.....	81 % positive.
Eichelberger reports 49 cases.....	65 % positive.
Liderman reports 41 cases.....	75.6% positive.

Of 280 cases of tabes collected from the literature 72.6 per cent. showed a positive reaction in the blood or spinal fluid.

The striking contrast between the results in paresis and tabes is accounted for as follows, namely, that paresis is not considered para-syphilitic, but as a manifestation of active syphilis (a meningo-encephalitis), and that tabes is looked upon as a chronic syphilitic meningitis of the cord with a subsequent degeneration of the posterior tracts, the more prolonged course of tabes allowing time for the syphilis to be cured.

Of 40 cases of cerebro-spinal syphilis 52.5 per cent. showed a positive reaction. In most of these cases the spinal fluid was tested, which is usually negative, whereas the blood is usually positive.

A positive reaction does not occur in non-syphilitic conditions. Of 229 cases examined all showed a negative reaction.

Numerous cases giving a positive reaction have changed to a negative reaction under treatment. Are we predicting too much when we say that the future treatment of syphilis will be a biologic treatment, *i. e.*, controlling the treatment from time to time by a Wasserman reaction?

The author has examined 27 cases of tabes, 19 gave a positive reaction, *i. e.*, 70.3 per cent.

He has also examined

1 case of spastic paraplegia .....	positive.
1 case of cerebro-spinal syphilis .....	positive.
1 case of paresis .....	positive.
1 case of syphilitic meningitis .....	positive.
1 case of syphilitic hemiplegia .....	positive.
1 case of arteriosclerotic softening .....	negative.
1 case of diabetic pseudo-tabes .....	negative.

Dr. Hugh T. Patrick inquired whether in cases of paresis and tabes with a positive reaction the administration of mercury produces a negative reaction. That is very interesting, because of the fact that in paresis the administration of mercury not only fails to produce a cure, but fails to arrest the course of the disease, although it sometimes appears to have a favorable influence on it. The same thing applies to tabes, although many of these cases have remissions, so that the conclusion as to the effect of any therapeutic measure can never be as definite as in the case of paresis. However, there is no very strong evidence to show that the administration of mercury definitely arrests the course of tabes any more than it does the course of paresis.

The case of arteriosclerotic softening which Dr. Harris examined was exceedingly puzzling from the physical as well as the mental standpoint, and after Dr. Harris's examination Dr. Patrick finally concluded that the case was probably one of paresis. Dr. Harris reported a negative reaction.

The patient died and the post-mortem findings of advanced atheroma with two large areas of softening in the brain, evidently of arteriosclerotic origin, sustained the conclusions drawn from the Wasserman test.

Dr. R. C. Hamill said the cases which Dr. Harris got from the infirmary at Dunning were interesting in that the negative ones had a shorter duration of *tabes* than the positive ones. The latter had existed about fourteen years, and the former seven to four years. The time elapsed since infection with syphilis in the negative cases gave an average of 25.2 and in the positive ones 20.6 years. One of the negative cases had *chancres* twelve years before and *tabes* for only four years, but at a rapidly progressing course. The ataxia is worse now than it was a year ago and he has constant severe pains, bladder crises, has lost control of his urine and is getting worse rapidly. On the other hand, some of the positive cases are of very long standing, some as long as twenty-five years, with the *tabes* of sixteen years' duration.

Dr. Peter Bassoe mentioned one case in which the Wasserman test was exceedingly valuable; in fact, it was the only means of making a correct diagnosis. A child of ten years had peculiar mental symptoms and a peculiar form of spastic paralysis. None of the ordinary signs of congenital syphilis were present. Dr. Harris obtained a positive reaction. At necropsy the brain revealed a general fibrous leptomeningitis which could hardly be anything but syphilitic. Dr. Bassoe cut out some pieces and stained for the spirochete with negative results. In regard to the clinical value of the test one thing ought to be emphasized. We are not satisfied to know that the patient has had syphilis, but we must be able to determine that the nervous symptoms present are due to syphilis. That problem comes up time and time again. At the Cook County Hospital they repeatedly heard patients give a history of all varieties of venereal infection, but they usually also are alcoholics and it is then difficult to interpret the symptoms presented. There may be a question whether the case is one of genuine *tabes* or alcoholic pseudo-*tabes*. If examination of the cerebro-spinal fluid gives a positive Wasserman test, and if this always means active syphilis of the nervous system, it helps a great deal, and if there also is lymphocytosis and a positive globulin test is obtained, Dr. Bassoe believes that the evidence is quite strong that the case is one of active syphilis of the nervous system. He would like to have Dr. Harris say whether he has found any exceptions to the rule that a positive test with the cerebro-spinal fluid means syphilis of the nervous system. A recent paper by Nonne disclosed some peculiar discrepancies. There were several positive tests in cases that did not appear to be syphilitic, such as multiple sclerosis and epilepsy, which made Nonne rather cautious in accepting the reliability of the test. Pappenheim in a recent paper claims that the Wasserman test is not a specific reaction for syphilis, but is due to the presence in the fluids examined of products of cell destruction, and that the reason we so frequently get the positive test in syphilis is that this disease is attended by destructive processes which liberate large amounts of globulin, thus explaining the positive Wasserman and globulin tests.

Dr. D'Orsay Hecht asked Dr. Harris what he thinks of the Noguchi modification of the Wasserman test and its value.

Dr. Harris said in regard to Dr. Patrick's question, as to the effect of mercurial treatment on the reaction, the bulk of the work done with this test has been in clinics, where only advanced cases are seen. How-

ever, if treatment is of any value in nervous diseases showing a positive Wasserman reaction, it is in the early cases. He has not seen any reference in the literature to a change from a positive to a negative reaction in nervous diseases. One thing learned from the Wasserman test is that we have not been treating syphilis properly. We do not treat these cases enough, and it is only by giving enough treatment that we can expect to change the positive into a negative reaction. Of course a positive Wasserman is of value only in that it shows that there is syphilis somewhere in the body. It does not indicate what organ is affected. If an examination of the cerebro-spinal fluid shows a positive reaction then the lesion is somewhere in the nervous system. It is in the alcoholic cases that Nonne found the reaction, but it is quite likely that these patients have a syphilitic focus somewhere in the body, and that the nervousness is due to the alcohol. Nonne's statistics come from Hamburg and should be regarded with some skepticism. He cites cases of multiple sclerosis and epilepsy as giving a positive reaction, but the tests were made by Eichelberg and Much. They report 40 per cent. of cases of scarlet fever as showing a positive Wasserman, but other observers were unable to substantiate these findings.

One worker in Copenhagen found that quite a number of cases of scarlet fever gave a positive reaction, but he was able to prove that this result was due to a change in the antigen. Working with aqueous extracts, which change from time to time, such results are produced; alcoholic extracts are more stable.

As to Noguchi's work, Dr. Harris understands he works with dried blood and human complement. The crux of the whole thing is this: If we add a small amount of antigen and of antibodies to an excessive amount of complement the reaction is negative. The antibody is an unknown factor, therefore results are not so reliable as where we are working with a known factor. Therefore, use less complement than is necessary to satisfy these two factors, so that none will be left over, to produce a negative reaction. Why a guinea-pig heart should act as antigen is not known, except that it contains a lipoid, which has the ability to unite with something in the syphilitic blood and bind the complement. This does not occur in as large a percentage of cases as when syphilitic liver antigen is used. It is also a fact that those who have used guinea-pig heart fail to get a positive reaction where it has been obtained when liver antigen was used. That complicates the compilation of statistics and makes such statistics as we have of less value. The only reliable antigen is extract of syphilitic liver.

As to Pappenheim's idea that the globulin was due to tissue destruction, it is well known that there is much tissue destruction in every case of infectious disease, yet in none of them do we get the Wasserman reaction. It has never been recorded in pneumonia, tuberculosis and other severe destructive processes, such as acute yellow atrophy or hepatic cirrhosis. Nonne reported a case of multiple sclerosis and one of tumor which gave a positive reaction.

## Periscope

### Journal de Psychologie Normale et Pathologique

(Fifth year. No. 4. July to August, 1908)

1. Contribution to the Physiology of the Blind Spot of Mariotte. POLI-MANTI.
2. Cerebral Syphilis with the Syndrome of Korsakoff of the Pure Amnesic Form. CHASLIN and PORTOCALIS.
3. A Singular Case of Sexual Perversion: Passion Through Restraint. LEROY.

1. *Blind Spot of Mariotte*.—This is an experimental study in the physiology of the "blind spot" and is enriched with statistical tables and tracings. The author's chief contention is that the blindness is merely relative as compared with the visual powers of the rest of the retina. Under appropriate and sufficient light stimulation the visual power of the so-called "blind spot" is observed to undergo gradual diminution from the ill-defined and irregular periphery to the center where it amounts to zero. Every examination of the "blind spot" must take into consideration the degree of light stimulation (physiological factor) and the judgment (psychological factor).

2. *Cerebral Syphilis with Korsakoff's Syndrome*.—As long recognized, Korsakoff's psychosis is not necessarily associated with polyneuritis and alcoholism. It has been seen in many other affections; least frequently, perhaps, in syphilis and general paresis. Jolly, Rœmheld, Deroubaix, Stransky, Soukhanof-Botenko, Zehen, Hirschl, Meyer and Ræcke have all noted instances of the latter. The case which the authors report is that of a man, sixty-one years of age, who acquired his syphilis when he was fifteen. The history and the results of the examination, presented in detail, inclined the authors toward the diagnosis of cerebral syphilis, although the autopsy, made by Mageotte, suggested the diagnosis of general paresis, with some peculiarities in connection with the lesion. The remarkable feature in the clinical manifestation of the case was the pure amnesic form of the Korsakoff psychosis, which seems to have existed from the very beginning of the disease. There were no fantastic recitals (confabulation) and the patient's consciousness of his mental trouble was clear and distinct. At times the realization of his amnesia was exceptionally accurate and keen. Before coming to the hospital he carried a note-book wherein he kept an account of his affairs, and while in the institution he would orientate himself in relation to time by referring to a journal. The writers say that they have never seen in literature an instance of amnesia so free of admixture with confabulation, delirium, intellectual enfeeblement or mental confusion. More than once, it was strange to observe so profound a disturbance of the memory, a disorientation so great in regard to time and space coexisting with a strikingly clear intellectuality and a conduct highly correct, all suggesting, as it were, the possible utilization of certain unstored impressions (amnesia of assimilation of Janet).

3. *A Singular Case of Sexual Perversion.*—Though suggestive of masochism this interesting case, of which the author presents a long, intimate and autobiographical report, is declared to be unlike any case of masochism hitherto described. The patient is thirty-three years of age, was married at twenty-eight, and is the father of a family. His affliction is intolerable to him and he worries lest it provoke a disgust for him in his wife. As a very young child, he delighted in tales and pictures that told of people bound with cords and chains. They produced a strange and unnatural excitement which bore no relationship whatever to sexuality or things pertaining thereto. He remembers particularly the effect produced upon him by an engraving representing Gulliver fastened down by the Lilliputians. In school he took part in and was interested only in those games demanding that he or someone else should be put under restraint. The conversation of his companions about women and sexual relationships awakened no interest in him. He gradually ceased attending church because the excitement provoked by the constraint of kneeling became annoying to him. He insists that though his sexual life began in a natural way as with all boys soon after this, the excitement provoked by restraint continued, the two being totally unrelated to each other. The author, on the other hand, declares that many circumstances indicate that there was some relationship between the two sets of feelings. Finally the patient himself was brought to realize, by a certain particular experience, that the relationship did exist. The remainder of the patient's story is not much unlike that of most sexual perverts, being a rehearsal of his secret methods of awakening or increasing his sexual activity, under all sorts of conditions, through the heightened emotion which physical restraint stirred up within him.

In summing up the author suggests that originally the emotion, common to children, upon depriving them of their liberty, was here greatly exaggerated. It was almost psychasthenic in character. This emotion was utilized to relieve the mental tension. Finally, the sexual phenomena appeared, in a mere accidental and accessory sort of a way, joined at one and the same time, to this exaggerated primitive emotion and the very general excitation which it provoked.

METTLER (Chicago).

### Revue de Psychiatrie et de Psychologie Expérimentale

(July, 1908)

1. Observations Serviceable in the Study of the Pathogenesis of Ideas of Negation. J. CRINON.
2. The Rôle of Intoxication in Mental Pathology, and the Influence of Traumatism or of some Incidental Disease on the Evolution of Certain Vesanias. PAIN and SCHWARTZ.

1. *Pathogenesis of Ideas of Negation.*—Four cases are reported and as a result of their study it was found that the dominant characteristics of all the cases were the disturbances of cenesthesia, affectivity, will, perception and memory. The cenesthetic troubles change, in effect, the organic base. The affective changes produce "contrary impressions" (Griesinger), the alterations of the will proceeding to a disappearance of volitional effort contributes to the growth of a new ego which the patient cannot regard as his. Psycho-motor hallucinations contribute also to this end. The defects of perception fail to give the patient a vivid picture

of the outside world and this failure is aggravated because the perception is not reinforced by memory. Among melancholias the organic alterations are most often found that are at the basis of the ideas of negation.

2. *The Evolution of Certain Vesanias.*—The authors cite four cases of acute psychoses which recovered in a manner to indicate that they were dependent upon toxins. The first case recovered after an accidental wounding of an artery resulting in a great loss of blood; the second after a severe diarrhea; the third suffered from an otitis media and became agitated, delirious and confused when the discharge stopped and calm and lucid when it reappeared; the fourth recovered as the result of trepanning and draining a pus cavity.

In their comment on these cases the authors make a plea for the toxic viewpoint and suggest that poisons of some sort may be the explanation in many cases. They suggest the toxic nature of dementia præcox and of epilepsy, and call attention to the natural corollary that an eliminative method of treatment is indicated in these cases. They suggest that the success of the prolonged bath is due to its favoring elimination.

(August, 1908)

Mental Confusion and Dementia. Ed. TOULOUSE and M. MIGUARD.

*Confusion and Dementia.*—The conditions of confusion and dementia outwardly resemble each other very closely. It becomes, therefore, of the greatest importance to learn how to differentiate them, to be able to tell in a given case, for example, when the first symptoms of dementia manifest themselves. The authors trace in outline the evolution of the ideas of confusion and dementia and consider the conception of dementia præcox a step backward as they believe it includes conditions of confusion which it took long years of evolution to separate from dementia and idiocy. Régis considers dementia præcox as a critical but not fatal transition between an acute confusion which has been slow to recover and a post-confusional incurable dementia. One of the authors (Toulouse) with Damaye has taken up the problem as to whether vesanic dementia, including here dementia præcox, was an organic, incurable defect comparable to paresis, organic and senile dementia, or whether it is only a functional alteration which while wearing the mask of incurability leaves the functions of judgment and reason really recuperable. They took the latter view and divide mental disorders into two great categories: states of defect—original (idiocy) and acquired (dementia), and states of disorder—with organization (delirium) or without organization (confusion).

In order that the subject of the paper may be intelligently discussed it is necessary to define confusion and dementia. This is done as follows: "We will give provisionally the name confusion to all states characterized by a non-systematized disorder of the intellectual images and functions, combined with a disorder of the voluntary activity (attention), and secondarily by alterations of consciousness, of the feelings and the will in their intellectual relations. We reserve the name dementia for all states characterized by loss of the images and defect of the intellectual functions (especially the highest, abstraction, generalization, judgment, reasoning) and secondarily by the disorders produced in other functions intellectual (sensations, associations) and psychic (feelings, will, attention) in their intellectual relations. We give idiocy and states of intellectual debility the same provisional definition as that of dementia except that we replace the words loss and defect by defect of acquisition (for the images) and defect of development (for the functions)."



Of the methods of investigating cases—observation and experimentation—the authors give their support unconditionally to the second. They warn, however, against drawing hasty conclusions from the usual routine tests such as the giving of simple arithmetical problems. Each case must be approached and studied intelligently rather than by a set, stereotyped method. In a subsequent communication the authors propose to give an exposition of their methods.

(September, 1908)

1. Introduction to the Study of the Psycho-Glandular Relations. LAIGUEL-LAVASTINE.
2. The XVIII Congress of Alienists and Neurologists of France and French Speaking Countries.
  1. *Psycho-glandular Relations*.—A short comment by the author outlining the mode of treatment and the aim of his work.—*Des troubles psychiques per perturbations des sécrétions internes*.
  2. *Congress of Alienists and Neurologists*.—Short abstracts of the contributions to this congress. The article does not lend itself to further abstraction.

(October, 1908)

1. Serum Diagnosis in Psychiatry. A. MARIE.
2. Disturbances of the Glands with Internal Secretions in Melancholiacs. LAIGUEL-LAVASTINE.
3. Notes on the Use of Isopral in Insanity. A. VALLET.
4. A Case of Psycho-Motor Hallucinations in a General Paralytic Presenting Delirium of Internal Demonopathy. GELMA and LERAT.
5. Post-Traumatic Maniacal Agitation Followed by Mental Enfeeblement. Recurrences of Agitation on Occasions of Toxic-Infectious States. Autopsy. DAMAYE and DESRUELLES.
  1. *Serum Diagnosis in Psychiatry*.—A review of serum work connected with insanity. The article contains nothing new or especially noteworthy. It is devoted in the main to a discussion of the Wassermann reaction and to the status of the *bacillus paralyticans*. The author has been unable to demonstrate any specific relation between this organism and paresis.
  2. *Internal Secretions in Melancholiacs*.—A mere note with a fragmentary bibliography appended.
  3. *Isopral in Insanity*.—Notes of twenty-two cases in which this drug was used are given. The author concludes it is a good auxiliary to chloral, produces a tranquil sleep, does not influence pulse or temperature. Dose from .25 to 1. gramme.
  4. *Psycho-Motor Hallucinations in Parcsis*.—A report of a case with few comments and no conclusions.
  5. *Maniacal Agitation*.—Report of a case which does not lend itself to abstraction further than is done in the title.

(November, 1908)

1. The Graphic Method in Physiology and Psychology. J. M. LAHY.
2. Contribution to the Study of Suggestion in Mental Pathology. DE SCHWARTZ.
3. Delirium of Internal Zoöpathy in a Persecuted Patient. VALLET and TASSOW.

1. *Graphic Method in Physiology and Psychology*.—A very technical article consisting in the main of a discussion, largely mathematical, of the construction and plating of curves.

2. *Suggestion in Mental Pathology*.—The case of a man admitted to the hospital with delusions of having been bewitched, and under the influence of a man who had treated him for an illness, and was exercising this influence in all sorts of mysterious and inimical ways. The delusions were largely communicated by the suggestions of his wife who believed in them and gave them in the history as being the cause of her husband's illness. He got well promptly when removed from the abnormal milieu in which his psychosis developed.

3. *Zoöpathic Delirium*.—A case of delirium of possession, interesting because of the innumerable variety of animals which the patient believed were introduced into her body. The animals were introduced into the abdomen by the rectum and often by the vagina with the aid of a speculum. With this zoömania was associated a delirium of persecution.

(December, 1908)

1. On the Graphic Method in Physiology and Pathology (2d article). J. M. LAHY.

2. Mental Confusion with Polymorphous Delirious Ideas and Dementing Evolution. Slow Incidence of General Paralysis Syndrome. Autopsy. HENRI DAMAYE.

1. *Graphic Method in Physiology and Psychology*.—A continuation of the article by the same name of last month. Consists largely in a description of instruments and in a plea for the graphic method particularly because it renders symptoms objective.

2. *Mental Confusion Followed by Paralysis*.—The report of a case commencing with symptoms of confusion. The paralytic syndrome came on insensibly with intellectual decay consecutive to an incoherent delirium eleven years before.

WHITE.

### Journal de Neurologie

(Vol. XIII. No. 6. 1908)

1. The Mechanism of Babinski's Symptoms. NOICA.

2. A Case of Dysthyroid and Dysorchitic Infantilism. C. PARHON and C. MIHAILESCO.

1. *Babinski's Symptom*.—While Babinski has held that the toe phenomenon represents a perversion of the normal plantar reflex, it has been thought by Crocq, Marinesco and others that we have to do here with two distinct reflexes, that of flexion and that of extension and at times adduction. The author in a previous study in collaboration with Sakelaru, came to the conclusion that in individuals showing spasticity of the lower extremities either the Babinski reflex or plantar flexion of the toes could be produced, on the one hand by exciting the external and on the other by irritation of the internal border of the foot. These reflexes are to be referred to different spinal centers, that of Babinski to the fifth lumbar, plantar flexion to the first sacral segment. There is as it were a struggle between the two reflexes and one or the other occurs depending upon whether the flexors or extensors are stronger at

the time. The author explains the fact that the Babinski reflex is usually found in spasmodic conditions as follows: In spastic conditions of the lower extremities, contractures are usually developed and these contractures always affect the flexors.

Now it is essential to the development of a reflex that the muscle through which it is produced should first be in a state of relaxation. Under the conditions mentioned, however, the flexors being contracted cannot respond to the irritation, hence the action of the extensors always at hand but ordinarily repressed through the opposition of the flexors, comes to the surface as the Babinski phenomenon. If the contractures gradually relax, the flexors are again able to respond and we get first both phenomena, then only an indication of the Babinski, and finally the flexion reflex alone. Considering the presence normally in very young children of the Babinski reflex, he points out that if infants are carefully observed, it will be noticed that practically all their movements are in the nature of flexions which movement is the primitive one due to instinctive protection by the individual of the important structures on the flexor surfaces of the limbs and those of the trunk. At this time he thinks the spinal centers for extension are little developed taking on their activity coincidently with the development of the pyramidal tracts in full only when the child begins to walk, and later preponderating in strength over the flexors so that it is easier for an adult to forcibly extend the foot and press down the point of the great toe, than to flex the foot at the ankle and extend the toe. Watching a young child carefully the author noticed that after the age of six months, while his movements were mainly those of flexion, he had begun to make occasional movements of extension, and the observant and intelligent mother informed him that it was not until the infant had reached this age that she had noticed these movements of extension. The action of the center toe movements of extension the author thinks is not developed until after this time, reaching its full strength after the child begins to walk at which time it is thought that the Babinski reflex usually disappears. Should the function of the pyramidal tracts be disturbed however, the Babinski reflex reappears and persists as long as this impairment is present.

2. *Dysthyroid and Dysorchitic Infantilism*.—Description of the case of a boy of 14 years of age who in spite of being of normal height, presented excessive weight, rounded feminine figure and retarded sexual development with undescended testicle, and deficiency in solid constituents of the urine with enuresis. Under the use of thyroid preparations the weight decreased and there was increased growth with development of a more masculine outline, descent of the testicle and increase of solid constituents, and ability to retain his urine.

(Vol. XIII. No. 9. 1908)

1. *Hydrotherapy in Neuritis and Neuralgia*. C. LIBOTTE.

General discussion of the physiological effect of the hot air bath, the spray, the jet and other hydrotherapeutic measures, as applied in neuritis and neuralgia, but in which nothing specially new is brought out.

(Vol. XIII. No. 10 and 11. 1908)

1. *Circumstances Which Justify or Necessitate the Mental Examination of a Person Accused of Crime*. XAVIER FRANCOTTE.

In this address evidently delivered before a legal and not a medical audience, the author passes in review the considerations which in the interests of justice should lead to an inquiry and examination, by an expert, of a person under arrest for the commission of a crime. Such an inquiry and examination should be held whenever the circumstances of the case give rise to a doubt as to the sanity of the accused. As indicating its legitimate scope and nature the author considers, under the following four heads, the circumstances which should raise doubts as to the normal mental condition of a defendant: (1) The hereditary antecedents of the accused. (2) His personal antecedents. (3) His conduct, appearance and present condition. (4) The particular character of the act of which he is charged. Under these heads he considers the most important facts indicating mental unbalance, in a way which should be illuminating to the layman and to the nontechnically informed physician, but presents nothing with which the ordinarily informed alienist is unfamiliar. He urges especially the necessity for considering the class of people whom Grasset has described as the "half insane" and "half responsible" for whom there should be at least some modification of the usual penalties.

(Vol. XIII. No. 12. 1908)

1. *The Treatment of Syringomyelia by Radiotherapy.* A. BIENFAIT.

A discussion of the symptoms and etiology of syringomyelia, with case histories of three patients who were treated (one by the author) by direction of the X-rays to the spine over the presumed seat of the disease. The author does not claim that any benefit may be obtained after cavity formation has occurred, but suggests that if taken in its early stages the formation of gliomatous tissue may be modified by radiotherapy.

(Vol. XIII. No. 13. 1908)

1. *The Importance of Sensory Troubles in the Early Diagnosis of Tabes.* Dr. VANDERVOET.

Referring to several cases in which useless surgical operations had been done to relieve pains in various internal organs which in the light of the later histories of the patients must be considered as representing the crises of tabes, the author urges the necessity for the most careful examination in all such cases before deciding upon operation, and insists upon the value of sensory symptoms as the very earliest manifestations of this disease. Among these he would give the first place to hyperesthesia of the intermammary region and to analgesia of the inside of the thigh and leg. These if combined with suspicious ocular symptoms he thinks justify a probable diagnosis. He also mentions the ulnar analgesia of Biernacki as an early symptom.

(Vol. XIII. No. 14. 1908)

1. *A Case of Aphasia with Apraxia.* Dr. GEERTS.

Description of a case of hemiplegia with the above symptoms, in a man aged 22 years, in whom though on account of the occupation of the patient—that of a painter—there was some question as to saturnine encephalopathy, the author felt justified in diagnosing cerebral hemorrhage. He brings out nothing new in his discussion.

(Vol. XIII. No. 15. 1908)

*Two Cases of Friedreich's Disease.* J. GEERTS.

Report of the cases of two brothers respectively 25 and 18 years of age. The case histories show nothing specially remarkable. The paternal grandparents had each had attacks of apoplexy, the grandfather having died in one, and one brother had had an attack of chorea. The rest of a family of 10 children are alive and healthy. No history of syphilis either hereditary or acquired.

(Vol. XIII. Nos. 16 and 17. 1908)

*The Pathological Anatomy of Tumors of the Spinal Cord.* JULES STEINHAUS.

An excellent résumé of the subject, but drawn entirely from the literature, and presenting no personal observations.

(Vol. XIII. No. 21. 1908)

*Pupillary Reactions Provoked by Light Acting Upon an Amaurotic Eye.* Dr. BOUCHAUD.

It is well known that when a ray of light is thrown upon a normal eye, the other eye being shaded, contraction of the pupil takes place both in the exposed and in the protected eye—consensual reaction. In case one eye is amaurotic however, while its pupil retains the ability to contract consensually on exposure of the sound eye to light, its own exposure is not followed by the consensual reaction in the sound eye. In the case of a patient described by the author the right eye which presented an old optic neuritis retained its ability to react consensually with the sound left eye. Also when the right eye was illuminated both narrowing of its pupil and consensual reaction in the sound left eye occurred. The author can give no explanation of the phenomenon.

(Vol. XIII. No. 22. 1908)

*Glandular Troubles in the Dementias.* LAIGNEL-LAVASTINE.

In paralytic dementia the author has found changes mainly in the way of vaso-dilatation, in the glands with internal secretion, especially in the adrenals and in the hypophysis. Schmieregeld examining the thyroid, parathyroid, hypophysis, adrenal, testicle, ovary, liver and pancreas has found lesions varying in character and extent. The author suggests that some of the delirious conditions observed in general paralytics may be due to hepatic and renal insufficiency and might be amenable to opotherapy. In dementia præcox he thinks there is room for an immense amount of work, which should take the form first of the clinical study of symptoms suggestive of glandular deficiency, second of opotherapy systematically applied according to clinical indications and lastly of minute pathological-anatomical investigations of the glands from these subjects wherever practicable. Mouratoff has found thyroid lesions in katatonia, and the author has observed hypertrophy of the adrenal and absence of the interstitial cells of the testicles in dementia præcox. Adrenal lesions have also been reported in epileptics and in senile dementia hypertrophy of the adrenals is said to be frequent.

## Revue Neurologique.

(Vol. 16, No. 21. November 15)

## 1. Aphasia and Hemiachromatopsia. PIERRE MERLE.

1. *Aphasia and Hemiachromatopsia*.—The author reported a case occurring in a man fifty-seven years old who had been a waiter. There was a history of alcoholic excess but no history of syphilis. The symptoms came on suddenly without loss of consciousness. There were found on examination two groups of symptoms: first, abolition of sense of color in the right half of both visual fields which was accompanied by a diminution of visual acuity; second, aphasic symptoms with some defects in intelligence. The latter consisted of an impossibility to read. Letters were recognized with some errors; impossibility to read numbers of more than two or three figures; and loss of the power to calculate. He could write his name, but could not write anything else, even to dictation. He copied very badly. Speech was correct but there was some dysarthria and rapid fatigue. The intelligence in general was normal. He could execute complicated orders but he had losses in memory especially as regarded orientation. The two main symptoms were hemiachromatopsia and alexia. In discussing the cerebral localization of the lesion producing such symptoms the author is inclined to the belief that hemiachromatopsia is due to partial impairment of the same regions which, when totally destroyed, produce hemianopsia. The fact that there was some diminution in visual acuity on the side of the hemichromatopsia is in favor of this view.

(Vol. 16, No. 22. November 30)

## 1. Brachial Diplegia Due to Polyneuritis, Apoplectiform Onset, with Mental Trouble in the Course of Chronic Lead Poisoning. HENRI CLAUDE and LEVI-VALENSI.

1. *Brachial Diplegia Due to Polyneuritis*.—The patient who was thirty-nine years old, and engaged in coloring postal cards, while walking along the street, became suddenly paralyzed in both arms. There had been no parietic phenomenon of any kind before this but he had been growing emaciated and pale. The arms were more affected than the forearms. The supinator longus was paralyzed on both sides. There was a reaction of degeneration and a diffuse muscular atrophy, most marked in the extensors of the fingers. There was no pain, but some tenderness on pressure on the nerves. Sensation was absolutely normal in all respects. The patient responded badly to questions, was disoriented, but talked very fluently, both fiction and truth. Lumbar puncture was negative. Electrical treatment was instituted with great improvement. In coloring postal cards it is habitual to wet the colors with the lips and lead colic is rather frequent. This patient had pursued this occupation for twenty years with no previous nervous manifestations.

(Vol. 16, No. 23. December 5)

## 1. Sarcomatous Meningitis, Chiefly about the Pons and Medulla. Cystodiagnosis of Neoplasm by Spinal Puncture. J. A. SICARD and A. GY.

## 2. Cerebral Tumors with Atypical Symptoms (Hemiplegic Form). A. COQUES.

1. *Sarcomatous Meningitis*.—The examination of cerebral-spinal fluid during life will sometimes reveal the presence of tumor cells permitting

the diagnosis of cancer of the nervous system. The patient reported was sixty years of age. He complained for some weeks of headache, vertigo and ringing in the ears. There was no albuminuria nor glycosuria and his temperature was normal. The first examination of the nervous system at that time was negative, but some weeks later the patient developed right facial palsy, deafness in the right ear and then involvement of other cranial nerves. The examination of the legs showed nothing abnormal. There was some paralysis of the right arm about two days before his death, which occurred four months after the first symptom. Four lumbar punctures were made, all of which showed the same findings. Pressure was slight, lymphocytes were present but rarely polynuclears; and there were numerous cells of considerable volume, with a granular protoplasm, sometimes vacuolated, in which, with Unna blue stain, the nucleus colored deeply but the protoplasm appeared pale. Certain of the larger cells showed karyokinesis. Autopsy showed a tumor adherent to the dura mater in the temporal region of the left side infiltrating a portion of the temporal lobe and the meninges at the base showed slight tenderness with slight exudate. The microscopical examination showed intense cellular infiltration of the meninges with embryonic cells and large sarcoma cells similar to those which were revealed by lumbar puncture.

2. *Brain Tumor*.—In cases of cerebral tumor without the cardinal symptoms: headache, vomiting, convulsions, etc., the diagnosis is difficult, often impossible. Often these cases take on the form of the ordinary hemiplegia. In a case in a man seventy-one years old a tremor began first in the right hand, then affected the left hand and then the head. The tremor was made worse by voluntary movement. The sensation was intact, the tendon reflexes were all normal and there was no Babinski reflex. There were no vasomotor, atrophic, intellectual or visceral symptoms. About two months before his death there slowly developed hemiparesis, with sensory disturbances and also a Babinski sign. On horizontal section of the brain just below the knee of the corpus callosum, there was found an infiltrating tumor occupying the retrolenticular region and the white substance adjacent to the insula, also the posterior extremity of the lenticular nucleus and the posterior limb of internal capsule. Histologically it was a glioma. The second patient was fifty-four years old, non-alcoholic but with a history of syphilis. Four years before his death he began having attacks of absolute mutism which would last a half an hour. Two months before his death he developed edema of the right upper extremity. There was some weakness of both the right upper and lower extremities but particularly the upper. The tendon reflexes were a little greater on the right side than on the left. There was no sensory disturbance. The right pupil was larger than the left. There was some difficulty in speech, the patient frequently hesitating and repeating the same word. There was some defect in memory and in concentration of attention. He had obsessions about the syphilis, was melancholy and talked of suicide. Lumbar puncture was negative. He died in an apoplectic attack and at autopsy there was found a tumor of the left frontal lobe the size of a small orange. Histologically, it was a sarcoma. Headache, vomiting and blindness were not present in these cases. In neither case had the fundus of the eye been examined and the author thinks that this would possibly have revealed the true nature of the condition.

(Vol. 16, No. 24. December 30)

1. The Growth of Nerve Elements in Areas of Softening and Cerebral Hemorrhage. MARINESCO.
2. The Technique of Regional Spinal Stovainisation. POP AVRAMESCO.
3. Cortical Anarthria. LADAME, VON MONAKOW and MOUTIER.

1. *Growth of Nerve Elements*.—Regeneration of cerebral cortex has occupied the attention of many men. The old authors suffered from a lack of elective staining methods and confounded neuroglia cells with nerve cells. Marinesco reports the examination of a number of brains, the seat of old areas of softening, and describes facts which demonstrate that the regeneration of nerve fibers in destructive lesions of the brain is a very frequent happening, and that the phenomenon is common in areas of softening.

2. *The Technique of Regional Spinal Stovainisation*.—The instruments used are: a 2 c.c. syringe; a platinum needle, 7 cm. long; a solution of stovain, recently prepared, of strength of  $\frac{1}{10}$  centigrams to a cubic centimeter, and sterilized by heat, at 65°, twice. The stovain is injected between the third and fourth or fourth and fifth lumbar vertebræ for anesthesia of the external genital organs, between the first and second lumbar for inguinal regions and lower limbs, between the ninth and tenth dorsal for anesthesia of the abdomen below the umbilicus, between the sixth and seventh dorsal for anesthesia of the abdomen above the umbilicus. Injection higher than this is dangerous because of the possibility of paralysis of the phrenic nerve and by consequence, a paralysis of the diaphragm. The region to be injected is made aseptic, then with the left thumb the spinous process of the upper vertebræ is located and the injection made a centimeter to the right or left, the needle introduced a little obliquely. In case of accident it may be necessary to administer oxygen, caffeine or ether, and to use artificial respiration. In case it is necessary to use general anesthesia later, the author prefers chloroform. It is necessary to be very careful of the asepsis.

3. *Cortical Anarthria*.—This has been the subject of several communications from the above authors in the last two numbers of the Revue. The present number contains the final replies and the end of the discussion.

(Vol. 16, No. 25. Supplement)

Contains the list of the original communications which have appeared in the Revue Neurologique during the year of 1908. The programs of Paris Neurological Society, the Paris Psychiatrial Society, and the Congress of Dijon, also the complete index of all the articles reviewed in the journal during the year 1908.

C. D. CAMP (Ann Arbor).

### Miscellany

The Phenomenon of Makropsy as a symptom in Acute Toxic Hallucinos. di Gaspero (Journal fur Psychologie und Neurologie Band XI., Heft 3).

Patient aged 28 years, clerk, not burdened by hereditary taints. For years he was a heavy drinker of wine and beer as well as an excessive



smoker. A few days after meeting with an accident he felt uneasy and oppressed, and his environments seemed changed. It appeared to him that his friends had swollen, congested and grotesque features. Following this he began to hear voices. He also noticed that the people looked gigantic, about three times their original size, their faces were of a dark bluish red coloring. The auditory hallucinations were of the typical alcoholic type, he was insulted and threatened so that he had to seek refuge in an army barracks. He also suffered from numerous hallucinations of general sensations. Orientation was good but he had absolutely no insight into his condition. In brief he presented the typical appearance of an acute hallucinosis in the sense of Wernicke. This diagnosis was also confirmed by the fact that within a few days the hallucinations disappeared and insight returned. The disturbances in the optical apparatus were (1) dysmegalopsia (macropsia) with dyschromatopsia and dysmorphopsia; (2) dyschromato-morphopsia and simple dysmorphopsia; and (3) dysmegaloptic and dysmegalomorphoptic hallucinations. After reviewing the different hypotheses on the subject of dysmegalopsia the author comes to the following conclusion. "The macroptic (dysmegalopsic) and mutatis mutandis dysmorphoptic visual disturbances represent the effect of a morbidly altered dynamic of the visual presentations which effect consists in a pathological transformation of normally received perceptions."

In this case the pathological transformation concerns preferentially the pictures of animated space-objects. In the sense of Wernicke "these visual disturbances are to be designated as clinically descriptive of psychosensory paresthesias of the simplest and most elementary kinds (outer illusions) and as such they are comprised in the disturbances of secondary identification. In this sense, the basis of the dysmegaloptic phenomena is the moment of a transcortical alteration of the spacial orienting apparatus in the fullest comprehension of the term."

A. A. Brill (New York).

Concerning Infantile Sexual Theories. S. Freud. *Zeitschrift Mutter-schutz*, Dec., '08.

To his very ingenious and instructive book, the "Three Contributions to the Sexual Theory," Freud now gives us the "Infantile Sexual Theories." In the former he advances his own theories; here, however, he gives us the infantile sexual theories in the strictest comprehension of the term, that is, they are the sexual theories held by the individual during his childhood. His deductions are based on direct observation of the utterances and actions of children, on information received during psychoanalysis of grown up neurotics concerning their conscious memory of childhood, and on conclusions interpreted into consciousness of the unconscious recollection obtained during the psychoanalysis of psycho-neurotics.

The author does not agree with those who object to deductions drawn from memories of neurotics on the ground that they are of a degenerative predisposition. One of the most valuable results obtained by psychoanalytic investigation is, that neuroses have no special psychic content peculiar to themselves. As Jung expressed it, neurotics suffer from the same complexes which the normals have to combat, with the difference that the latter are able to combat them without sustaining any coarse demonstrable damage, while the neurotic can only suppress the complexes at the price of expensive substitutive formations. Future neurotics often have

strong sexual impulses and tendencies to precociousness and hence they give us more vivid information than we can obtain from our own dulled memories. Children do not take the difference of sexes as a starting point in the investigation of the sexual problems. As far as their memory goes they recall their father and mother and hence assume their existence as an unquestionable reality. Similarly the boy behaves towards his little sister from whom he differs in age by one or two years. The desire for knowledge does not awaken spontaneously, but appears under the instigation of dominating selfish impulses after the age of two when another child is born in the family. The thought of sharing everything with the new-comer awakens the emotional life of the older child and stimulates its thinking abilities. It shows open hostility to the new arrival and the first problem presented is "Where do children come from?" meaning, where did this intruder come from? Neither the parents nor the nurse give any direct information, they either answer evasively, reproving the child for its inquisitiveness, or give some mythological answer, such as, "The stork brings children." Numerous investigations show that many children are not satisfied with such answers and give no credence to the stork story, but continue their secret investigation. They become suspicious of their elders and ask no more questions. This gives rise to the first "psychic conflict." They feel a preferential desire for ideas which are evaded by their elders, and those imposed upon them by the authority of the "big" do not agree with their own. This may cause a "psychic splitting" and constitutes the nuclear complex of the neurosis. It was definitely ascertained by the analysis of a boy of five that the change of pregnancy in the mother does not escape the vigilant eye of the child, and that the connections between the increase in size of abdomen and the birth of the little sister were rightly conceived.

The noteworthy characteristic of the false sexual theories entertained by children, is the fact that although they are grotesque they contain a part of the real truth. In this connection they are analogous to the solutions of very difficult problems of the universe assumed by grown up individuals. What is true in these false sexual theories owes its origin to the components of the sexual impulse which are already active in the childish organism. The origin of these hypotheses is due to the psychosexual constitution and not to the psychic arbitrary actions or accidental impressions. It is for this reason that one can speak of typical sexual theories of children.

The author then gives three theories. The first refers to the difference of sex. The male child adjudges the penis to all persons of both sexes. This conception is encountered in later life in dreams, where women often appear with male genitals, and in classical antiquity it is faithfully reproduced in the numerous hermaphrodites. If the presentation of a woman with male genitals becomes fixed in the child's mind and resists all influences of later life it results in homosexuality. In the normal sexual constitution already in childhood, the penis is the leading erogenous zone, the chief autoerotic sexual object. This becomes even more enhanced if the child is caught stimulating it with his hand and is threatened with having it cut off. The second theory owes its origin to the fact that the child is ignorant of the existence of the vagina. If the child grows in the mother's abdomen it must be discharged like a passage. In later life that theory is forgotten and it is then assumed that the navel opens and lets the child come out or that the abdomen is cut open and the child taken out, just as happened to the wolf in Little

Red Riding Hood. The cloaca theory which is a reality in many animals, is the most natural and the only one which the child thinks of. If by some accident the child witnesses the coitus act of the parents it builds up the third typical sexual theory. Coitus appeals to the child as an act of violence in which the weaker is overpowered by the stronger. In other words, it conceives the coitus in a sadistic sense. This is further strengthened by seeing some blood stains on the bed sheets. The child also occupies itself with the nature of being married. The conceptions are variable depending on its own accidental impressions but they all point to the fact that the state of marriage is a gratification of pleasure and a putting away of shame. The infantile ideas of marriage which are often retained in conscious memory play a great part in neurotic symptoms in later life. Children often play "Doctor" and "Papa and Mama" in which they imitate their own ideas on these subjects that is, they do in the presence of others what they would otherwise be ashamed to do. A wish to marry may in later life assume an infantile expression in the form of unrecognizable phobia.

The reviewer realizes that some of the ideas expressed by the author will meet with numerous dissenting signs, etc., but it is hoped that before repudiating these an honest attempt will be made not to follow the example of the boy in the author's article, who, after another boy explained to him things sexual dryly remarked "It is possible that your father and many other people do such things but I am sure that my father never does."

A. A. Brill, New York.

Sexual Obsessions. Löwenfeld (*Zeitschrift f. Sexualwissenschaft*. Vol. 1, 1908. No. 5).

Impulsive ideas based on sexual spheres are divided by the author into three groups: (1) Impulsive ideas of an obscene content; (2) impulsive ideas which are contently the equivalents of the obscene in so far as they belong to the realm of perversions; and (3) impulsive presentations referring to one's own sexual power or to the nature of one's own sexual organs. In (1) there is mostly a reproduction of definite sexual events or fancies, occasionally also evoked through accidental objective impressions of resembling associations. Coitus plays the chief part, also the picturing of the female body and especially certain sexually attractive parts. Those reproduced by associations of resemblance are often very far-fetched. A patient suffering from impulsive ideas had to think of the vagina whenever he inserted a key into a lock; when he passed under a bridge he was obsessed by the thought of thrusting his hand under a woman's dress, and on seeing a cylinder he had to think of an erection. Individuals of a ruminating disposition are apt to elaborate accidental perceptions into infinite contrivances about sexual processes or about the nature of the sexual organs of certain persons. The author then cites Kaan's case of a 26 year old man in whom the most indifferent things caused numerous impulsive ideas of a sexual nature; thus, while conversing with a lady his tight-fitting trousers recalled his own genitals and immediately he was obsessed with speculations as to the looks of the lady's genitals. The obscene obsessions predominate in individuals suffering from sexual hyperesthesias. They are mostly found in masturbators of both sexes; in persistent relative or absolute sexual abstinence, and in impotence with marked libido. In women local irritations in the sexual apparatus, such as pruritus, may be etiological factors. As an example of

(2) the following case is given. A man 42 years old excited himself sexually in his youth by sadistic presentations (punishing a little girl by beating her on the naked buttock). As a result of sexual abstinence caused by marital disagreement he again merged into masturbation evoked by the aforesaid fantastic ideas. The fancies, however, underwent a change: instead of little girls, grown-up women were substituted. The masturbation was always ushered in by these fancies, and though at times willingly, they often came on during his occupation and contrary to his own will causing daily a number of masturbations. The author then cites Freud and Jung who by psychanalysis succeeded in finding the connection between the unconscious repressed and the obsessions. The third group predominates in men and refers to the behavior of their own sexual organs. The case of a man obsessed by the idea that his penis was gradually becoming smaller and receding into his belly, and another who continually worried over the fact that his penis was too small are examples of this group. In both cases there were no tangible reasons for the obsessions. Hysterical women are frequently obsessed by the idea of being pregnant, though the possibility of conception can be positively excluded. Another variety of sexual obsessions belonging to this group are the impulsive fears of one's own sexual potency. This is mostly found in men whose sexual accomplishments are for some reason temporarily diminished. The failure of an attempted coitus produces a lively effect so that at the next attempt there is a fear of a repetition of the fiasco thus causing a lack of perfect erection. The fear then becomes an obsession and may prevent sexual congress for years. It is quite conceivable that such obsession will especially thrive where there already exists a certain sexual weakness, hence they are frequently found in persons whose potency has been lowered by masturbation, frustrated excitement, and other sexual injuries. In such cases the patient and occasionally even the physician attribute the impotence to the sexual injuries, whereas it is chiefly due to psychic inhibition. Obsessive fears of impotence as a result of a fiasco may also occur in men whose potency is perfectly intact. This may be due to embarrassment, doubt, scruples, extra-conjugal coitus, etc. A young man who was always potent could get no erection after a day of excessive business excitement. This produced such an effect that even after his business affairs were in perfect order the impotence continued.

A. BRILL (New York).

Sexual Influence. Kuster (*Journal für Sexualwissenschaft*. Vol. I, 1908, No. 3).

The author gives a new explanation for the origin of the sexes; it is based on empirical knowledge and lays no claim to anything conclusive. Among his patients there were families who had exclusively boys and others who had exclusively girls. In one of the first cases the father experienced pain during intercourse and but seldom went through it, always taking advantage of the menstrual periods to abstain as long as possible, while in one of the second cases the father was very virile and could hardly contain himself during menstruation and confinement. Sexual excitement is heightened during and soon after menstruation and therefore most intercourse takes place proportionately at this time. It is for this reason that there are more girls than boys. Fecundation following soon after menstruation favors the feminine sex, while long

periods after menstruation—ten to twenty days—favors the masculine sex. This is confirmed by the following facts: Conception when taking place on the marriage night generally results in a boy, because weddings are arranged to occur between the menstrual months and the groom is usually an abstainer at least for a time before the wedding. In marriages of convenience as in royal houses where love plays no special part the offspring are generally boys. Besides, in royal families intercourse is made difficult by court ceremony. Wherever there is a real love marriage among royalty the results are usually girls. In families where there are mostly girls, the husband anxious to get a son has frequent intercourse with his wife and therefore gets more girls, finally thinking it useless and not willing to have any more girls he restricts his intercourse and exercises it only before the onset of the menses so that no conception shall take place—a widespread popular belief—but then the eagerly-desired son suddenly appears. The above are explained by the fact that soon after menstruation the ovum is most powerful and the woman is in her strongest sexual period, while the spermatozoa are weakened by frequent intercourse, are young and immature, hence, the ovum asserts itself and a girl is the result. After fourteen days the ovum is weakened while the spermatozoa are strengthened and matured and the result is a boy. Where the husband is considerably older than the wife the results are almost exclusively girls while where the conditions are reversed boys result. Here it is the stronger ovum or spermatozoon that has its way. Cattle breeders are aware of this and make use of it whenever they wish to produce certain sexes.

The author admits that the question is not as simple as it would appear; many other factors must be considered such as diseases of the ovum and sperma, etc. The author successfully applied his theories in one case.

A. BRILL (New York).

Zur Lehre von der motorischen Apraxie. Kurt Goldstein. (Journal für Psychologie und Neurologie, Band XI. Heft 4, 5 and 6.)

This interesting case concerns a woman of 57, who, after an apoplectic stroke sustained a left-sided paralysis. This with the exception of a slight weakness of facial and arm muscles soon disappeared, leaving a marked paralysis of the leg. While the paralysis subsided there appeared a motility disturbance in the muscles of the face, tongue, arm, especially of the hand, which was characterized by the following moments: (1) By a striking impoverishment of spontaneous motion (hypokinetic). (2) By difficulty of every intentional motility. (3) By inability or marked disturbance of action ("Handeln") intact ideation and motility (Motor Apraxia). (4) By the existence of "spontaneous motions" as well as intricate manifestations of amorphous motions on attempting to execute even simple motions on requests. (5) Later there were disturbances of optic imitation, inability to imitate passive motions of the other side and even of the left side. (6) Agraphia of left hand. (7) Total absence of volitional feeling in the execution of spontaneous or requested motions. (8) Tonic innervation during certain motions of the left hand.

In analyzing the case the author concludes that the motor disturbance is independent of the simultaneous sensible one and that the sensorium is intact. To explain the apractic manifestations in the left hand it is not necessary to assume a total enucleation (Liepmann) of the

sensomotorium, but it can be explained on a psychological basis. He then discusses the "Theory of Actions." The simple reflexes resemble those motor manifestations which according to Liepmann are brought about by the "cerebral short circuit" (*cerebralen Kurzschluss*) and are to be conceived as the work of the sensomotorium. The route of every voluntary innervation in a sensory stimulus is no direct transition from stimulus to reaction but it moves over a detour of the presentation. Between the sensorium and motorium there must always exist a connecting link which lodges in the psychic presentation value and in this lies its principal distinction from both motor and sensory apparatus. This connecting link essentially exists in the space conception. According to Storch this segment is the stereopsychic field. The stereopsyche is the central organ of all cognition, of all higher psychic activities and all voluntary motions. Thus it is the central organ of action ("Handeln"). Action is nothing other than a simple motion. Only through the complication and the definite connections of a large number of individual motions is it distinguished as a unit. A lesion of the connections of the stereopsyche and the sensory and motor centers produces characteristic symptoms. The first embraces the different agnosias, psychic blindness and psychic deafness, etc., while the latter the motor apraxia. The stereopsychic field is localized in the frontal lobes. The following tracts of patient must be injured: (1) Corpus callosum fibers. (2) The fibers of connection between the right motorium and the right stereopsychic field. (3) Connecting fibers between the right cortical field of sensibility and the right stereopsychic field (with the frontal lobe or a greater segment of the right cortex). (4) Fibers of pyramidal tracts. To explain the damage of all these tracts, it suffices to assume a single localized affection "in the subcortical medullary layer of the right central convolution lying directly under the cortex, leaving the central convolution itself fairly intact but markedly damaging its connections with the frontal lobe, and perhaps also with the rest of the right cortex and corpus callosum, while the pyramidal tracts are only slightly affected."

A. A. BRILL (New York).

## Book Reviews

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INSOMNIA AND NERVE STRAINS. Upson. G. P. Putnam's Sons, New York and London, 1908.

What might have proved an interesting contribution, if it had been presented in the form of a paper, has been made into a book. The writer discusses the effect of peripheral irritation, especially the irritation of impacted teeth, upon the mental state. He places on record a series of cases which are too superficially described to be of much value.

S. LEOPOLD.

GRUNDRISS DER PSYCHIATRISCHEN DIAGNOSTIK. Prof. Dr. Raecke. Verlag von August Hirschwald. 3 Marks.

Raecke in his little book (consisting of 146 pages and ten illustrations) outlines in detail the examination of patients from psychical and physical points of view. The anamnesic data are divided into five parts: (1) family history; (2) early development and birth; (3) later development, schooling, occupation, etc.; (4) etiological factors of the disease; (5) the development of the psychosis. The methods of neurological examinations are complete, up-to-date and arranged in a systematic manner. The psychical status is given with a full description of the various tests for intelligence, memory, etc. Jung's association test is alluded to. In the second part of the book the author takes up the specific forms of mental diseases, which unfortunately are classified according to the old nomenclature, and emphasizes the important points which are essential to observe in the anamnesis and clinical picture.

The author presents his subject clearly and concisely. This book makes a serviceable guide and aid to the beginner in psychiatry and neurology and to the general practitioner.

M. J. KARPAS (Manhattan State Hospital, N. Y.).

SYPHILIS UND NERVENSYSTEM. Neunzehn Vorlesungen für praktische Aerzte, Neurologen und Syphilidologen. Von Dr. Max Nonne, Oberarzt am allgemeinen Krankenhaus Hamburg—Eppendorf. Zweite Vermehrte und Enweiterte Auflage. S. Karger, Berlin, 1909, 699 pp., 20 Mk.

Nonne's first edition on Syphilis and the Nervous System appeared about seven years ago and served as a powerful stimulus to a most searching analysis of the symptoms of this disease occurring in the nervous system. The increase in knowledge so largely influenced by the first edition is in the second thoroughly and ably presented.

Nonne first calls attention to the far reaching influence of the discovery of the syphilitic microorganism; its stimulus to the elaboration of the serum reaction of Wassermann and the necessary relation of these factors to the serological, microscopical and chemical investigation of the cerebro-spinal fluid. The new edition discusses these questions very thoroughly in at least four chapters, 1, 16, 18 and 19. Not only does the diagnostic problem receive a searching and critical expression but the

number of the author's clinical observations is more than double that of the former edition and the pathological analyses of the cases is specially rich.

In this clinical embarrassment of riches it is difficult to pick out certain chapters for commendation, but special emphasis should be laid upon his discussion of the question of syphilitic neurasthenia, or *lues nervosa*, upon stationary cases of *tabes* and of general paresis, as well as rudimentary *tabes*, upon the psychoses erected upon a syphilitic basis and the general subject of ocular palsies. Individual readers will find other chapters of equal or more value, but these are full of good material.

With reference to the newer studies on complement fixation, Nonne's position is of particular value in view of the almost epidemic wave of Wassermannism. He does not agree that the Wassermann reaction is specific, and a slavish adoption of the teachings of this investigator he holds to be premature. In three cases of alcoholic pseudo-*tabes*, two gave a positive reaction, with negative cerebro-spinal fluid tests; in eight cases of brain tumor four gave positive blood tests, but on autopsy the absence of syphilis left the significance of the blood tests suspicious. One case of nine of multiple sclerosis, without syphilis, gave a positive reaction, while in nine patients with idiopathic epileptic attacks, without syphilis, five gave a positive blood test. Nonne's technique can hardly be called in question; the explanation is still to be sought. In view of recent findings in measles and other conditions it seems doubtful whether with the present technique we can take the positive stand taken by Wassermann and his pupils. According to Nonne's findings the strength of the reaction has no prognostic significance.

A new albumin test for the cerebro-spinal fluid is described, which the author holds is of value in a differential diagnosis between cerebro-spinal syphilis on the one hand and *tabes* and general paresis on the other. This is brought about by the use of a saturated solution of ammonium sulphate. In connection with the studies of Nissl with Essbach's reagent and of Noguchi this new test is of interest. The study of the cytological contents of the cord is furthered by Nonne's contributions. He holds that spinal puncture is without danger when properly performed. His own experience now reaches over 800 punctures. The patients are always punctured in the lying condition, never sitting, not more than 4 c.c. are removed and 12 hours rest in bed is obligatory after the puncture, the patients lying absolutely flat without pillows of any kind. He gives definite warning in cases of cerebral tumor, syphilitic neurasthenia and cerebral syphilis. A neglect of these cautions may be followed by protracted headache (7 days), nausea and vomiting, with pain in the neck and back. Tabetics, paretics and alcoholics seem less susceptible. Accidental blood contamination can usually be separated from essential blood admixture. The measurement of the cerebro-spinal pressure according to Nonne has proven of no value, even so the determination of the freezing point, but the cell and albumin content are of special value. Lymphocytosis is an early symptom of *tabes* and of paresis, but Nonne reports that occasionally it is present in alcoholism, in idiopathic epilepsy, in cerebral tumor, multiple sclerosis, and in post traumatic psychoses. Strongly positive lymphocytosis he has only found in tabetics and paretics, however. In general the experience of Nonne agrees with that of Rehm from Kraepelin's clinic. As for the origin of the cells of the cerebro-spinal fluid, it is evident that they are not specific for syphilis,



but that syphilis is the most potent factor in causing their development.

We cannot go further into the many excellent features of this book. It is without a peer in its realm and the hackneyed phrase of the reviewer that no neurologist's or psychiatrist's library is complete without it expresses a truth of more than usual significance.

JELLIFFE.

PSYCHOSEN MIT WAHNBILDUNG UND WAHNHAFT EINBILDUNGEN BEI DEGENERATIVEN. Von. Dr. Karl Birnbaum. Anstalt Buch, Berlin: Carl Marhold, Halle.

It has taken a comparatively long time in all fields of medicine to eradicate the idea that a single symptom or a narrow group of symptoms is sufficient to give a true conception of a disease process. To the student of the history of medicine it is distressing to note how in each field of medicine this mistake has kept repeating itself, oblivious of the developments in other fields, and the psychiatrist as student in a field of last development for obvious reason is only beginning to rid himself of this incubus. It is not many years since the symptom of pathological excitement has been considered purely symptomatic, and may occur in a vast variety of psychoses; the same is true of depression; but delusions of persecution still remain by too many psychiatrists to be looked upon as the invariable ear-mark of what is termed paranoia, unmindful of the fact that this symptom too is to be regarded solely as a symptom, and as occurring in a great number of diseased processes.

The introductory words of Birnbaum's small, yet very comprehensive monograph emphasize this view point. He says that a true advance in the study of paranoia (Kraepelin) as well as of delusional processes in general is made possible only when one ceases to consider the particular delusional ideas which appear in the disease picture as of primary importance. In this relation Kraepelin's narrow grouping and sharp delimitation of paranoia concepts constituted a turning point in the development of the whole question, and gave a new point of departure for a deeper grasp of the situation.

The Kraepelin paranoia is too familiar to be further characterized; it is a rare type and may be regarded as an ideal by which other chronic delusional processes may be measured and compared. This Birnbaum has attempted, paying particular attention to a series of individuals in the asylums of Herzberg, Dalldorf and Buch, in which the criminal insane are under medical supervision. His monograph considers the pathological imagination, and delusional developments in a large number of psychopaths—degenerates—and without attempting to give a systematic treatise he has given an illuminating sketch of the mental peculiarities of a large number of criminals.

The general contents of the monograph comprise a chapter on Delusion Formations in Degenerates; the Course of the Delusional Psychoses of Degenerates; and the Fundamental Characteristics of the Delusional Processes of the Degenerate, in which latter chapter the pathological swindler, hysterical, simulator, epileptic, præcox and acute and original paranoics are discussed from a differential standpoint.

It is to be regretted that the author has handled his material in a somewhat unsystematic manner, which makes it difficult to gain his general viewpoint; but it seems clear that he lays considerable stress on the importance of disadvantageous environment in the development of de-

lusalional ideas in the group under consideration, in contrast with the endogenous development of delusalional ideas in the Kraepelin type. In the degenerate group the constant action of unhealthy life conditions is of primary importance, and for the criminal class confinement of itself is a potent factor in the causation of delusion formation. This factor is of so great importance that the psychiatrist of the present time should view with disfavor the combination of prison and asylum which remains under prison conditions; such for instance as is seen in the New York system.

External influences play a great part in the development of these delusalional formations. Affect shock is of primary importance, and it is surprising to see what a role jealousy plays in these psychopaths under consideration, with reference to the delusion formation.

The monograph is to be recommended, especially to those who come in contact with the so-called criminal insane; apart from very striking difficulties in its style it will repay study.

JELLIFFE

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### A CRITICAL STUDY OF THE SENSORY FUNCTIONS OF THE MOTOR ZONE (PRE-ROLANDIC AREA); MORE ESPECIALLY STEREOGNOSIS<sup>1</sup>

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I wish to confine the scope of this paper to sensory disturbances produced by lesions strictly confined to the ascending frontal convolution and adjacent areas of the frontal lobe. My particular object has been to ascertain how often astereognosis occurs, and whether the loss of this function as seen in lesions of the motor zone is in any way distinguishable from astereognosis which is caused by lesions of the parietal lobe. There certainly could not be more divergent opinions on this subject than those which we find in recent publications. Prince maintains that stereognostic perception and asymbolia can have no cortical localization whatsoever. Russel and Horsley maintain that the sensory and motor zones are identical. Mills and Weisenburg affirm in the most emphatic manner that all sensory perception is located postero-Rolandic.

I will consider the subject of astereognosis first, and will limit my investigations to cortical and subcortical lesions of the motor zone. I shall place on record three well studied cases of astereognosis, and shall also review the cases bearing on this subject which have been published in the last decade, covering the

<sup>1</sup> Read at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1909.

period during which especial attention has been paid to the study of stereognosis. I have been especially careful to study the cases of cortical resection in the motor area after the area had been determined by the use of the faradic current. Much of the apparent confusion of ideas and contradiction in anatomical interpretation of the location of sensory functions in the cortex will be swept away by the now generally accepted view of Sherrington, that the ascending frontal convolution alone is motor in character. I do not believe that it will clear up the situation entirely, but it will prove almost to a certainty that simple sense perceptions are located posteriorly to the Rolandic fissure.

We shall see that for touch, muscle sense and stereognosis there is some room for a divided opinion. Stereognostic perception is not a sense, but it is a conclusion arrived at as a result of a process of association of perceptions of nearly, if not all, of the various qualities of sensation. The sense of pressure, passive movements (muscle sense) and the sense of position especially are involved. As an intellectual process is involved in this associative act, and, moreover, as optic memory pictures are also called into play, we can easily understand how complex is the brain activity which is necessary before the form and nature of objects can be determined by the hands or feet when the eyes are closed. I believe that Prince is right when he maintains that there is a distinction involved between the two acts of recognizing the form of objects in the three dimensions and the recognition of that object in a specific way. Perhaps with the recording of a larger number of well observed cases this division of the subject may lead to harmony of apparently contradictory findings.

Hitherto the term stereognostic perception has been applied to the ability of recognizing the form of an object as well as its nature. Obviously the latter function involves a greater amount of knowledge and experience, and calls into play a larger number of cerebral activities than the former.

If we wish to term both processes stereognosis, and maintain that in either form association, and therefore an intellectual process is involved, we must still admit that in the recognition of the form of an object we must associate only the simpler forms of perception of touch, muscle-sense and the sense of position. Whereas, in the latter, viz., the ability to recognize an object, we may call into play the perception of all qualities of general sense, together with one, two or more of the special senses.

There can be no doubt but what we may have pure cases of so-called tactile asymbolia. That is, with intact sensation in all qualities and the ability to recognize form, shape, surface condition being retained, the individual cannot with eyes closed recognize the object with one hand, while he can with the other. Poggio has lately placed such a case on record, with operative findings, to which I will refer later on.

While Prince's discussions seems to me to be in a large measure academic, I believe it would be wise to try and see whether the varying views as to localization of stereognostic perception cannot be harmonized on this basis.

I do not believe that we ought to complicate this subject by using the terms agnosia and asymbolia, because there is as yet no uniformity of definition and limitation of the above terms, and to go into them would lead us into a discussion beyond the realms of the subject-matter of this paper. It may, however, become necessary to distinguish between: (a) Simple astereognosis which should mean the loss of ability to recognize the form of an object (primary agnosia). (b) Complex astereognosis which comprises the loss of the ability to recognize both the form and the character of an object (asymbolia).

Prince maintains, both theoretically and practically, that because stereognostic perception is an intellectual function there can be no cortical localization. Object perception being clearly an intellectual process you can have no localization—a symbol can have no cortical localization. In the second place, there is no clinico-pathological evidence in favor of such a center. On the other hand, Mills and Weisenburg hold that the stereognostic perception has a cortical location independent of the cutaneous and muscular sensibility, as well as of the motor area. They maintain that this stereognostic region is a sub-area of the concrete memory field, and that it is located in the superior parietal lobe.

I believe, in the narrower interpretation of the term center to mean a small area of cortical gray matter, that Prince's contention is correct. But in the larger interpretation, that there are one or more areas, cortical or subcortical, the destruction of which leads to simple or complex astereognosis, everyday experience teaches us to be true.

Practically, we know that loss of stereognostic perception occurs commonly in lesion, in or below the surface of the brain.

The object of this paper is to try and harmonize the various views, to see whether they cannot be reconciled.

Stereognostic perception depends upon an association of the simple perceptions of touch, muscle-sense, sense of position, temperature, as well as memory pictures of other special sense perceptions. Many cortical areas, as well as the association tracts connecting these areas, are involved in this complex process, and therefore theoretically the destruction of several areas may bring about this striking clinical phenomenon.

We are at once confronted with the fact that there is as yet no unanimity of opinion as to the cortical areas involved in the perception of simple sensation. I believe, however, that the newer teaching of Sherrington, that the ascending parietal convolution is not motor, has done much toward unifying the opinion as to the sensory functions of the cortex of the parietal lobe. There are, however, dissenting views, and the careful study of cases of cortical resection of the motor areas, located and circumscribed by the electric current, shows in that at least some qualities sensation perception is associated with the motor zones.

There has been some doubt thrown on the relation between lesions of the parietal lobe and astereognosis by Gordon and others, and I therefore wish to place a well studied clinical and pathological observation on record in support of contention of Mills and others that lesions of the superior parietal lobe produce astereognosis.

CASE I.—Sudden onset, during night, of monoplegia of right arm, after a few attacks of headache. Later Jacksonian epilepsy, beginning in right arm, gradual development of right-sided hemiplegia with amnesic aphasia. Loss of muscle sense, of sense of position, of stereognostic sense; other qualities of sensation being normal.

H. F., age 33, stone-cutter. Has one child. Denies venereal history. Examination made November 15, 1908. During the past summer patient has had several attacks of violent headache, which were attributed to heat. Three weeks ago awakened one morning with a sense of numbness and weakness in the right arm. This gradually improved, but the arm never became entirely well, although patient worked daily. One week later had two convulsions in right arm, one-half hour apart, followed by almost complete paralysis. In the next week two more attacks, the last of which spread to right leg and face and tongue. Patient has no headache. Does not vomit.

*Examination.*—Mental condition good. No swelling of optic nerve. Muscles of eye and eyelid normal. Sensation of face normal. Weakness of right side of face and tongue. Typical amnesic aphasia.

Complete flaccid paralysis of right arm, paresis of right leg. Exaggerated reflexes, Babinski sign present, no ankle clonus. There is complete loss of muscle sense in the right arm and hand. Also loss of sense of position. Senses of touch, pain and temperature normal. Sensation of leg normal. There is complete astereognosis of the right hand. Patient is unable to recognize character of objects, their shape, size, or surface characteristics. An operation was suggested, but refused. Patient developed violent headaches, vomiting, progressively increasing mental hebetude, had a series of convulsions, paralysis of whole right side became complete. Typical choked disks developed after two weeks. Death occurred six weeks after examination.

*Autopsy.*—*Brain.*—On removal of brain the cortex over the upper portion of the ascending parietal and *adjacent portions* of the superior parietal convolution was found to be soft and partly disintegrated, bluish red in color; immediately subjacent, the cortex being as thin as tissue paper, was a tumor non-infiltrative about size of a hen's egg, which extended downward, partly outward toward the internal capsule. The cortex over the tumor seemed to be flattened out and exceedingly thin and could be separated from the tumor underneath. In a word, the tumor occupied subcortically the superior parietal convolution.

I believe that this case is a striking illustration of the commonly accepted view, that a gross lesion of the superior parietal convolution can produce astereognosis, and that the symptom-complex is of great localizing value. The chief purpose of this paper, however, was to show that we can have typical astereognosis in lesions of the frontal lobe, in the ascending frontal convolution, and adjacent areas of the frontal lobe. I have carefully looked through the literature and analyzed the reported cases to see whether or not they would corroborate the opinion engendered by my two observations. I will first give the history of my two cases and then analyze the reported cases, in which either the lesion was in the motor area or the motor area was excised.

CASE II.—Subcortical tumor of the ascending frontal and the neighboring frontal lobe, of the arm center (pre-Rolandic location) astereognosis of the right hand, other qualities of sensation practically normal.<sup>1</sup> E. O'B., aet. 30, single, father living, mother died of heart disease. Five years ago the patient suffered from pulmonary tuberculosis.

On January 29, 1901, while eating, there was a sudden twitch-

<sup>1</sup>The above history is taken in part, on account of surgical report, from the article of Dr. Ransohoff—*Journal American Med. Assoc.*, 1902.

ing of the lip on the right side, followed by a twitching of the right thumb, index and middle fingers. The entire arm was drawn upward and backward, and then he lost consciousness. A second attack occurred as he was closing his satchel. This time it began in the fingers which seemed to clutch the satchel; the arm and shoulder were then drawn up and he again lost consciousness. I saw the patient shortly after this attack and his description thereof was very clear up to the moment of the loss of consciousness. A third attack came on July 20 and a fourth one August 20. When seen about this time by Dr. Zenner slight attacks of a different character developed. Sometimes they consisted of only a peculiar sensation of numbness in the thumb; again, there was a stinging sensation in the thumb, index and middle fingers. More rarely there were also slight clonic spasms in these fingers. September 14, 1901, he had a paroxysm of clonic spasms of the right side of the mouth, beginning in the lips, and of the hand and arm followed by a general convulsion. After consciousness returned he suffered very slight headache and a sense of prostration, which continued for several hours. Aside from this he never had headache and has not vomited.

*Examination.*—His mind has been as clear as ever. The patient's general condition is good, although he has lost about twelve pounds in weight since his first attack. Pulse a little more rapid than normal, tongue slightly coated. Bodily functions otherwise normal. Urinalysis negative. Heart and lungs normal. The pupils, optic-disks—the movements of the eye, vision, hearing, knee jerks and plantar reflexes are entirely normal.

*Sensation.*—Patient speaks of a constant numb feeling in the tips of the fingers of the right hand, but a careful examination of tactile, pain, muscular sensations reveals no impairment. He speaks of objects often dropping out of his right hand. Examination shows some astereognosis; for instance, he cannot distinguish coins in the right hand. Dynamometer indicates right hand 69, left 66. Percussion over the skull elicits no tenderness.

On the suggestion of Dr. Zenner the patient was placed on the bromid of potassium, in 15-grain doses. This treatment was continued during three months, during which the patient had no convulsions. When seen by Dr. Zenner, November 11, the patient had no convulsions, though he had not infrequent peculiar sensations for a short time in the lips and fingers on the right side. There were still no symptoms of increased intracranial pressure. No headache, vomiting or optic neuritis. There were now slight symptoms of paresis. The right thumb and index fingers were weaker than the left; there was slight paresis of the right side of the mouth. In speaking there was more movement on the left side of the face, and when the patient forcibly compressed his lips they were more easily separated on the right side



than on the left. After the discontinuance of the bromids the convulsions soon recurred. They began as in the previous attacks, with a twitching of the lip, or of the thumb and index fingers. They recurred at intervals of four or five days. Clonic spasms in the fingers and mouth appeared very frequently, and a decided paresis in the former was easily recognized. The patient was unable to write without great difficulty and could not fasten a button, although the sense of touch was unimpaired.

Notwithstanding the entire absence of the general symptoms of brain tumor the focal symptoms were so characteristic that the diagnosis of brain tumor was made, and from the previous history of the case it was believed that a conglomerate tubercle would be found. The patient was examined about this time by Dr. Hoppe and remained for some weeks under his care and he also concurred in the advisability of an operation.

*Operation.*—Good Samaritan Hospital, February 11, 1902. Large horse-shoe-shaped incision over left psycho-motor area with its central point over the middle of the Rolandic fissure. Trephine opening enlarged with rongeur forceps to limits of the incision in the scalp. The bleeding was very profuse from the diploe, but was easily arrested with bone wax, except for a very free hemorrhage from a large branch of the temporal diploic vein, which could only be checked by blocking it with a sterilized tooth-pick. The dura presented a normal appearance, but was devoid of pulsation. The opening of the skull was three and one-half inches long and three inches wide. Temporary sutures of silkworm gut were used to close the wound.

Second operation, February 14. This was begun without anesthesia. The wound was easily opened. The dura now presented a feeble pulsation. It was opened by a horse-shoe incision. A flap with base below was formed and reflected toward the temple. While the cerebral convolutions did not bulge into the wound, inspection and touch failed to reveal anything abnormal. The patient was now brought into a sitting posture. This so allowed the brain mass to recede that palpation beyond the wound margins was made easy. A distinct induration was thus made out beneath the ascending frontal convolution and adjacent part of the frontal lobe. The operation thus far had been almost painless. Chloroform was now administered. With rongeur forceps the cranial opening was enlarged. The convolution over the indurated space presented a normal appearance, except for the abnormal size of the pial vessels. The ascending frontal convolution was incised, perhaps an inch below the surface a tumor was exposed and easily shelled out. Its size was not larger in any diameter than one inch; its position was such that its narrowest part presented toward the cortex; its long axis was inclined backward and inward through the corona radiata and toward the ventricle. The hemorrhage while free

was easily controlled by pressure. One cortical vein required tying. The opening in the dura was closed with fine silk and the external opening closed by interrupted sutures, a strand of silk-worm gut being left for drainage. The center of the flap was buttonholed and through the opening a gauze tampon was lightly placed against the dura. The patient recovered promptly from the operation. The first dressing was changed on the tenth day, when a complete primary union had taken place. During two or three days after the operation there was a slight paraphasia and an inability, except with great effort, to move the right hand and forearm. Within a week the muscular control had been largely regained. There was also present marked astereognosis in the right hand. The ability to recognize the form of objects, as well as their character, was lost. Sensation for pain, temperature, muscle sense and sense of position was normal. Ordinary sense of touch was retained, but was slightly diminished in the sense, that when two points were brought very close together they were not recognized (spacing sense). An examination of the tumor, made by Dr. Wolfstein, showed it to be a solitary tubercle, with the usual number of giant-cells and the degenerating area which takes the stains badly.

CASE III.—Gradual onset of left brachial monoplegia following Jacksonian seizures. No loss of sensation in any of its qualities before the operation. On trephining, no gross lesion was found, hand and arm center in ascending frontal convolution accurately located by the faradic current. The centers for flexion and extension of hand were excised; after excision, complete paralysis of left arm, with complete astereognosis, all other qualities of sensation being intact.

Mrs. L. F. C., Bennington, Ind., act. 45, farmer's wife. Has four children and has had no miscarriages. Has always been well with exception of some general nervousness. Nine months ago was found in the night by husband in a state of general convulsions. Patient remembers that the convulsion was preceded by pain in the left arm; after regaining consciousness she remembers nothing of the attack. After the attack the left arm was paralyzed, but regained its strength to a degree, but has always been weak since the attack. Since then patient has had several attacks, all beginning in the same way, viz., spasm and cramp in the ball of left thumb, then rapid pronation. Feels as if arm is being twisted, cracks, then entire side becomes rigid and unconsciousness follows in a few seconds, after which the convulsion becomes general.

In the course of ten months the paresis of left arm has become almost complete.

There is general weakness, some headache, but not severe; vertigo at times, but no vomiting. Headache is not increased by any pressing, coughing, etc. Has had six attacks in all, none of which were limited to the left arm.

*Examination.*—Intelligence and memory normal, pupils equal and respond to light, slight degree of papillitis in left eye, papilla of right eye normal, external muscles of eyes normal, no loss of sensation in region supplied by fifth nerve. Slight weakness of left side of face and tongue (very slight.) Paresis of left arm with exaggerated reflexes, left leg normal. No loss or change of sensation in any of its qualities in the left arm or leg. Patient was operated upon in September, 1908. Two stage operation by Dr. Joseph Ransohoff. On removal of dura a careful examination in all directions failed to reveal either a cortical or subcortical lesion. A careful electric examination was made of the cortex under the supervision of Dr. Louis Ransohoff, the patient being perfectly conscious; the center for the various groups of muscles very quickly and readily excited on the ascending frontal convolution. Finally, with a minimal current, the center for the ball of the left thumb was excited. Patient, who was unaware of what was being done, called out that one of her attacks was beginning. Repeated examinations all around this area having convinced us that we had the cortical area for the ball of thumb and the muscles of the left forearm, an area of the cortex, about the size of a five-cent piece, was carefully excised, great care being taken to remove only the gray matter. The operation was followed by complete paralysis of the left forearm and weakness of the left arm. All qualities of sensation were normal—pain, touch, temperature, muscle sense, and sense of position.

There was, however, almost complete loss of stereognostic perception; patient failed to recognize form or shape, density or character of objects placed in her hands with the fingers tightly pressed over them. When a large bottle was placed in her hands, which stretched the fingers to the utmost, patient was able to recognize it. In a word, the loss of stereognostic perception was complete and all other qualities of sensation remained normal. This continued for at least three weeks, until patient returned to her home. Since then I have had no opportunity for examining the patient.

In the last two we have operative cases. In No. III the cortical center was localized with great care with the faradic current, and carefully excised. The astereognosis followed the removal of the cortex, other qualities of sensation remained normal.

In this case there was no change or loss of the stereognostic perception before the operation. In the second case astereognosis became more complete after the operation, and the operation revealed the growth to be in the pre-Rolandic area, viz., in the arm center of the ascending frontal convolution and the adjacent regions of the frontal lobe, *subcortical*. In this case the sense of touch may have been slightly diminished, but all other qualities of sensation were normal.

There is a striking difference between the first case, in which the lesion was found in the parietal lobe, and the second and third cases, in which the lesion was pre-Rolandic in location. In the first case the astereognosis was associated with the loss of the muscle sense and the sense of position, in the other two cases astereognosis was practically the only sensory manifestation, all other qualities of sensation remaining normal. Was this difference merely accidental, or have we here a valuable indication as to cerebral localization? Can we set up a rule that when astereognosis is unattended with loss of other qualities of sensation, that, other things being equal, the lesion is pre-Rolandic; and, secondly, when attended with loss of sensation in other qualities, other things being equal, the lesion is behind the fissure of Rolando in the parietal lobe? Two cases cannot be of much localizing value. We must consider in the first place whether we have the record of any other cases which might lead us to believe that a lesion of the motor area may be associated with astereognosis. The testimony of clinical cases, especially the well-known fact that hemiplegia is so often associated with a more or less marked astereognosis, is of no value at all.

I have analyzed nearly all cases of cortical lesions in which the loss of stereognostic perception was associated with the motor areas and have also searched the records for operations for cortical resection of motor areas for focal epilepsy. As I said before, we need not go back farther than 1900 for our records, for observations on sensory loss do not include astereognosis in the sense we now understand it.

Dr. E. W. Taylor (1) reports a case similar to No. II. There was marked astereognosis with the tumor located anterior to the fissure of Rolando, the location of the tumor being verified by surgical operation and later by autopsy.

Dana reports a case of sarcoma of the ascending frontal and of the cortex over the base of the second frontal convolution with marked astereognosis.

Walton and Paul's (2) report has attracted much attention as proving that lesions of the motor area produce astereognosis. They do prove, however, that lesions of other parts of the parietal lobe than the superior parietal convolution can produce astereognosis.

The value of these cases is doubtful to-day. Of the five cases

reported, only the second, third and fourth have a cortical localization, and in all three the ascending parietal convolution was involved in the pathological process, the lesions being post-Rolandic in all three cases.

Now let us consider the cases in which the motor areas or centers were more accurately localized. I refer to cases of resection of the motor area for epilepsy, after the areas themselves were carefully localized and circumscribed by means of the faradic current according to the method of Horsley.

There is one and only one objection to these cases, namely, that the loss of sensation and of stereognostic perception may have been the result of bruising. The surrounding brain tissue, or that of the cortex of the brain of the parietal lobe, was compressed by a thin clot of blood, secondary to the operation. This view is also expressed by Oppenheim (3), but the fact that the sensory disturbances and the loss of stereognostic perception always occur (when mention of it is made at all) in the limb, usually the arm, whose center has been excised, and not in the other extremity, and its persistence in some of the cases for a long time, even years, at least lends some strength to the assertion that the removal of the cortex was the cause of the loss of sensation and of the stereognostic sense.

Spiller quotes Marinesco, who reported a case of Jonesco (4). The cortex of the motor area, localized by the faradic current, was removed and astereognosis followed. On account of my inability to look up the original article I am unable to critically report on this case.

Krause (5) is most positive in his statements, although the four cases which he reports are not entirely free from criticism. He begins his argument in favor of the sensory and stereognostic functions of the ascending frontal convolution, by affirming his belief in the views of Sherrington, Grünbaum and others, that only the ascending frontal convolution has motor functions. Then he describes how closely he followed the methods of Horsley in finding and circumscribing the motor centers in the pre-Rolandic area, and how careful he was to remove only a small area of gray matter, limiting the depth to 5 mm. After the removal of the cortex, he says, "We have disturbances of sensation in all of its qualities—touch, pain, temperature, slowness of conduction, loss of the sense of position, location in space,

muscle and joint sensations, and the stereognostic sense. The disturbances are of so gross a character that there can be no question of having made a mistake."

Some weight must be laid on these observations by a man of Krause's standing on account of the painstaking accuracy with which the centers were localized, and the positive statement of the findings.

The pathological character of the lesions are as follows in Krause's cases:

CASE I.—Small cyst of the facial center.

CASE II.—Scar in the facial center; excision.

CASE III.—Excision for hemiplegia with hemianopsia, lesion being adhesion of pia mater to the arm center.

CASE IV.—Sub-arachnoid cyst of the arm center.

Case III is at least doubtful, because of the presence of hemianopsia, and I give the cases for what they are worth.

Krause expressly says that the sensory disturbances above-mentioned were not present before the operation, but followed the removal of the centers.

Braun (6) reports a case, a removal of the arm center previously located electrically, and reports that "*Tast-gefühl*," which was the German terminology for astereognosis, was diminished for months after the operation.

Verges (see authority) reports a case of Raymond's in which the cortex of the motor area was removed for focal epilepsy and the operation was followed by marked astereognosis of the right hand.

Rasumosky (7) reports seven cases of excision of the motor areas, all electrically determined. These cases are chiefly valuable on account of the observation of sensory defects after the operation, especially the sense of touch and muscle sense, but only in the first case is there an allusion to what might be considered astereognosis. I give Rasumosky's cases because they throw some light on the sensory functions of the motor area. All centers were exactly localized by electric current.

CASE I.—Focal epilepsy, sensation, excision of arm center. Anesthesia of all qualities of sensation after operation. Marked astereognosis of third, fourth and fifth fingers of left hand. Absolute loss of sense of touch in these three fingers thirty months after operation. Other qualities of sensation became normal after forty days.

CASE II.—Focal epilepsy, resection of centers for flexors and extensors of thumb and fingers. Sensation normal before operation, anesthesia, loss of tactile sense and muscle sense after operation. Other qualities of sensation soon returned to normal, but loss of muscle sense persisted five years after the operation, in the thumb and index finger.

CASE III.—Removal of motor center for flexors of hands and fingers for focal epilepsy. Sensation diminished in hand and forearm, qualities not specified. Disappearance in twenty-four days.

CASES IV and V.—No sensory observation.

CASE VI.—Focal epilepsy, area for arm removed. Sensation normal before operation, except slight loss of muscle sense, after operation diminution of other qualities of sensation.

CASE VII.—Removal of area for facial muscles, two years after operation slight diminution of sense of touch and pain.

Poggio (8) reports a typical case of what he calls tactile asymbolia. The patient was able to recognize form as well as surface characteristics, but was not able to recognize the object itself, with the left hand.

It was a case of focal epilepsy starting in the three fingers of left hand. The operation revealed two cysticerci, size of a cherry stone, one over the ascending frontal convolution, the other over the foot of the second frontal convolution, growing from the pia. They were easily removed. The other qualities of sensation were unaffected. Poggio offers this case to disprove Prince's assertion that asymbolia has no cortical representation.

How can we reconcile Cases II and III, and the cases taken from the literature, both of brain tumors and resection of the motor cortex, electrically circumscribed, with the view of Mills (9) and others, that the motor and sensory cortex are absolutely separate? Speaking of brain tumors Mills (9) says: "In all the cases in which disorders of sensibility, including astereognosis, were present, the evidence pointed to the fact that the lesions accounting for these symptoms were located in the post-Rolandic region."

Verger says, "That if the disturbance is due to loss of primary tactile and kinesthetic impressions the lesion may be in the motor area. If the symptom complex points to a disturbance of the optic component (optic memory pictures) we may look for the lesion farther back in the parietal lobe."

I would interpret this statement of Verger to mean that if the patient is unable to recognize the form in the three dimensions of an object, we should look for the lesion in the motor area, and if in addition he has no notion of the character of the object for which memory pictures must be called into play we must look for the lesion farther back in the parietal lobe.

The question which I asked earlier in the paper, whether the loss of stereognostic perception with or without the loss of other qualities of sensation could be an aid to localization, whether astereognosis unassociated with loss of tactile and muscle sense would indicate a lesion of the motor zone and astereognosis with loss of tactile sense, muscle sense, and sense of position indicate lesion of the parietal lobe, can hardly be answered by the study of hitherto recorded cases. We need more careful anatomical and clinical observations, although the two cases (II and III) recorded in this paper would suggest that astereognosis without loss of other qualities of sensations would indicate a pre-Rolandic location. Poggio's case would also support this.

Let me see now how much the above cases, in which all the lesions were confined to the motor zone, enlighten us first as regards astereognosis, and secondly, as regards sensory functions of the motor area.

As regards astereognosis, we must hold that lesions of the motor zone do cause a loss of stereognostic perception, with the exception, however, of four cases, viz., those of Taylor, Dana, Poggio and Hoppe. The lost stereognostic perception always followed surgical interference and was never present as a clinical manifestation in the operative cases cited before the operation. It is true that the undoubted cases are very few, but so also are the cases of cortical excision as a whole, and even fewer in which the condition of sensation has been studied after the operation. These cases of extirpation of the cortex are of far greater value than animal experiments and should be carefully studied in the future. Although we have undoubted proof that removal of the cortex of the motor area is followed by astereognosis, it is equally true that in only four cases astereognosis existed before operation, and that until more evidence is brought forward, we must hold with Mills, that astereognosis as a clinical manifestation, especially in brain tumors, occurs most frequently in lesions of the parietal lobe, but not necessarily of the superior



parietal lobe. We must always, however, bear in mind that both tumor cases as well as excision of the cortex show that lesions of the frontal lobe (motor zone) can and do cause astereognosis. As to the sensory functions of the motor area, we are confronted with the same difficulty. In Cases II and III, which I recorded, we have after the operation practically no loss of sensation in any of its qualities other than that of stereognostic perception. But in the other recorded cases, especially those of Krause and Rasumovsky, we have loss of sensation, especially for touch and muscle sense, although Krause insists that loss of sensation in all of its qualities followed excision of the cortex. I mention here Patrick's well observed case of a small lesion of the ascending frontal convolution, causing sensory disturbances in various qualities.

Once more we are confronted with the same paradoxical situation, that pathological lesions of the motor zones rarely produce loss of sensation, whereas, excision of the cortex is followed by such a disturbance. We simply have to fall back on the old theory, that sensory impressions can be perceived by various areas of the cortex, just as they can follow vicarious routes; that sudden removal of the centers is followed by loss of sensation, which in most instances clears up, but occasionally persists for a long period of time, but that slowly developing pathological lesions, such as brain tumors for instance, of the motor zones, although they do produce subjective disturbances of sensation (Case II), do not produce objective disturbances, except in rare instances. I therefore agree, in a clinical sense, with those who hold that for purposes of localization we must at present adhere to a strict separation of motor and sensory areas, the Rolandic fissure being the dividing line. While there may be exceptions to this rule, it is the most practical, and should be followed until more conclusive clinical evidence to the contrary is available.

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## AN ANEURYSM OF THE LEFT ANTERIOR CEREBRAL ARTERY WITH RUPTURE, SIMULATING A BRAIN TUMOR<sup>1</sup>

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NEW YORK

If one is to judge by the records, true aneurysm of the cerebral vessels is not very common; the basilar artery being the one usually affected, the middle cerebral next in frequency, and the anterior cerebral very rarely so. On the other hand it is possible that they are often overlooked, which may account for their seeming infrequency, the point of rupture being so imbedded and concealed that a careful search is required before this is exposed. The history of the present case is an appropriate illustration of this statement, besides containing some points of both clinical and anatomical interest.

The patient, a man thirty years of age, was seen with Dr. W. S. Thomas on June 3, 1907. His father died of tuberculosis, and the patient gave a history of chronic heart disease. Eleven years ago he had a chancre, followed by secondary lesions of the skin, and five years later he began to have headaches of severe type. These were located chiefly in the frontal region and were regarded, as well as treated as bilious attacks. In January, 1906, he had his first convulsive seizure, general in character, accompanied by loss of consciousness and followed by a deep stupor. Since then there have occurred at frequent intervals similar attacks. On no occasion has there been any aura, biting of the tongue or localized spasm of muscles. At the time of my examination he was lying quietly in bed, apathetic and indifferent to his surroundings. He answered various questions slowly, but correctly, using the right words and not showing any symptoms of aphasia. There was no evident paralysis of the face or extremities.

The grasp of the right hand was 32 and the left 30. No decided ataxia was elicited, though in one of the tests it was thought he responded less quickly and accurately with the right hand. The knee jerks were exaggerated and equally so. The Babinski sign was not present. Examining for touch, pain and temperature revealed no change from the normal, which was also true in regard to the special senses of taste, smell and hearing. Thorough testing of his handwriting could not be made owing to

<sup>1</sup> Read at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1909.

his poor general condition and defective vision. However, in one attempt at writing his name he managed to write fairly well all but the last two letters. There was marked tenderness to pressure at the base of the skull, with some rigidity of the neck, and the Kernig sign was also a marked symptom. Examination of the eyes showed no paralysis of single or associated ocular movements, no ptosis, no difference in the pupils, which were moderately dilated and responded to light and accommodation. The ophthalmoscope showed a double optic neuritis with choking of the discs. The pulse was slow, 64, and slightly Corrigan in type. The apex beat of the heart was in the sixth space, three and a half inches to the left at the apex, and transmitted was a loud, blowing systolic murmur and over the aortic area a double murmur.

On the basis of the above findings a diagnosis of a tumor of the brain was made, complicated by a basilar meningitis, either tubercular or syphilitic. Lumbar puncture failed to substantiate the former belief and a vigorous antisyphilitic treatment was then commenced.

Ten days later a decided improvement in his condition was noted. His headache was less severe; he was brighter mentally and showed more interest in his surroundings. On June 28 this improvement was still more decided and an examination failed to elicit any tenderness at the base or any stiffness of the neck, besides the Kernig sign had disappeared. On July 3, just thirty days from the date of the examination, while the patient was up in a wheel chair he was suddenly seized with a severe clonic and tonic general convulsion, followed by a complete relaxation of all muscles and deep coma, in which condition he died two hours later.

The autopsy was made by Dr. Francis S. Wood, the head only being examined. Both the dura and pia mater were tremendously congested. The color of the left frontal lobe was of a peculiar reddish yellow, resembling changed blood pigment. Over the left frontal lobe the crest of brain tissue was extremely thin and under this was a large mass, about the size of a small peach, consisting chiefly of blood clot, interposed with necrotic brain tissue. It was pretty well circumscribed, involving the first, second and third frontal convolutions, and into this mass hemorrhage had taken place. A pink granulation halo about the mass suggested a gumma. On the base of the brain, under the pons, cerebellar crura and interpeduncular space was a subpial clot which was recent. It extended backward behind the medulla toward the foramen of Magendie.

The ventricles were slightly dilated and both the lateral, third, and fourth were filled with soft recent clot. The location and extent of these findings are shown in the accompanying photograph (Fig. 1).

Being in doubt as to the true nature of the tumor, the specimen was given to the New York Psychiatric Institute for further examination and study.

The examination was made by Dr. C. I. Lambert, to whom I am indebted for the following report: The pia was slightly thickened and hazy, its vessels much injected. There was no apparent atrophy of the convolutions. An irregular cone-shaped hemorrhagic mass occupied the interior of the left frontal lobe. Its base was approximately coextensive with the prefrontal area, its apex was directed backward and reached to the basal nuclei, touching the anterior limb of the anterior capsule.

The clot was firm throughout and surrounded by a narrow rust-colored and injected marginal zone of brain tissue, which



FIG. 1. Longitudinal section through tumor and left hemisphere.

microscopically was found to consist of necrotic brain substance and granulation tissue. The cranial nerves and basal vessels were obscured by the extension of the frontal lobe hemorrhage. On section the basilar artery appeared slightly thickened. The larger cerebral arteries, posterior, middle and anterior were found to be diffusely thickened, resembling in places firm hollow cords. Examining the vessels relative to the hemorrhagic mass itself, a fusiform aneurysmal dilatation 1.5 cm. by 1 cm. of a primary branch of the left anterior cerebral artery was found.

Serial sections of this exposed a rupture of its wall in the antero-superior convexity (Fig. 2), fully explaining the origin of the hemorrhage.

Sections of the cerebral vessels showed specific features of syphilitic endarteritis obliterans (Fig. 3), a marked proliferation of the intimal tissue, production of new elastic tissue, fracture, splitting, and particularly dissolution of the original elastic lamina,

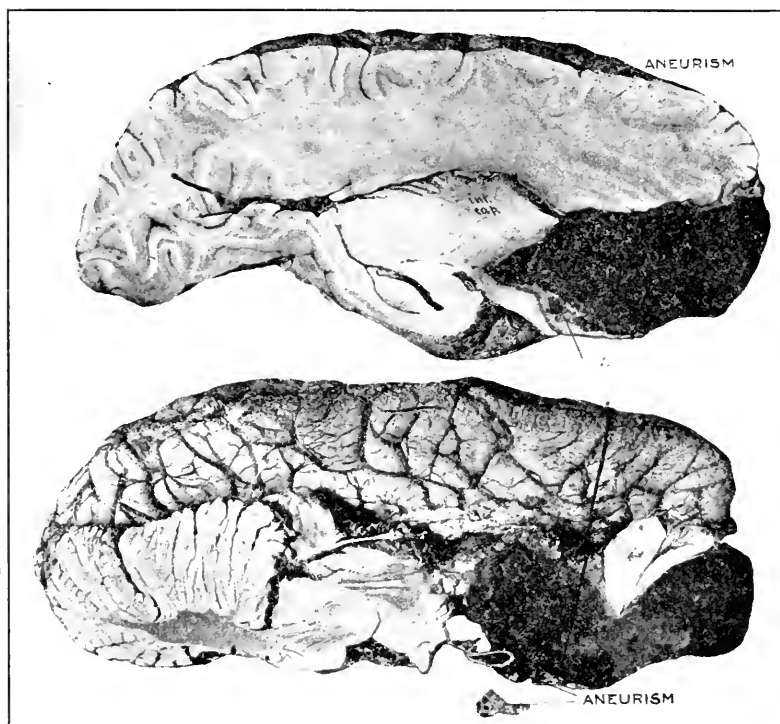


FIG. 2.

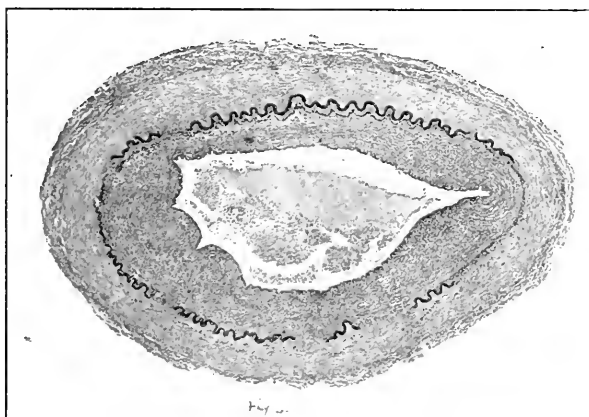


FIG. 3.

probably due to a previous arteritis. Lymphoid and plasma cells were most abundant over the brain stem and about the vessels in the vicinity of the hemorrhage, but in no place equal to or resembling a gummatous condition.

*Remarks.*—In reviewing the history of this case, it seems of interest both from a clinical and anatomical point of view.

The presence of severe headache, tenderness at the base, stiffness of the neck, Kernig's sign, mental apathy, slowness of speech, convulsive seizures, and optic neuritis with choking of the discs, certainly justified the diagnosis of brain tumor complicated by a meningitis. Although the localizing symptoms were not very manifest, yet the change in character, mental dullness and slowness of speech, without motor paralysis, suggested the frontal lobe as the site of the lesion.

In arriving at the diagnosis of the nature of the tumor, a tuberculous one or a gumma was alone considered, owing to the family history of tuberculosis and the confession of the patient to a specific infection. Lumbar puncture failing to verify the tubercular theory it seemed proper to try the effect of anti-syphilitic measures, and with such a decided improvement in the symptoms as to support the belief that syphilis was really the etiological factor. This opinion has been amply corroborated by the results of the microscopic examination of Dr. Lambert, several of the cerebral vessels being affected by an endarteritis obliterans. Furthermore, a careful investigation of the tumor mass demonstrated the interesting fact that this tumor was the result of an aneurysm of the left anterior cerebral artery, and the rupture of this was the immediate cause of death. Moreover, from the size of the tumor and the evidence presented by the old clotting it is reasonable to suppose that a former leakage had taken place. Although intracranial aneurysm as a general rule occasions symptoms which are indistinguishable from neoplasm proper, there are one or two in the present case worthy of note. The headache of which the patient complained was of a very severe type, frequently only relieved by repeated doses of a narcotic. This variety of headache has been referred to in other recorded cases. Choking of the discs is not usually present, but here it was most marked, and therefore is an additional fact in support of a former hemorrhage, thus causing increased intracranial pressure. The sudden attacks of loss of consciousness are to be explained by the

inequalities in the distension of the tumor and consequent variations in the brain pressure.

In regard to the immediate cause of the origin of the aneurysm in this case, the evidence is strongly in favor of syphilis as being the prime factor, although one might be justified in considering the embolic theory, on account of the history of chronic heart disease and the presence of disease of both the mitral and aortic valves of the heart. In conclusion, this case of cerebral aneurysm enlarges the sphere of intracranial tumors. The history and symptoms in the case gave no true indication of the nature of the process, but were only those which would be associated with cerebral tumors in general.

## REPORT OF A CASE OF SYRINGOMYELIA<sup>1</sup>

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NEW YORK

Although the symptom complex of syringomyelia is well understood both from the observations of Morgagni, Santorini, Schultze, Schlesinger and other authors, this case is presented as being of some interest. In the first place it again brings before us a typical picture of the disease and also eminently verifies its chronic course, as the patient has been under the personal observation of the writer for twenty-three years, during which time there has occurred little or no material advance in the progress of the disorder.

The patient is sixty-four years of age, married, and a shoemaker by occupation. He was seen for the first time in June, 1886, and since this date he has been under my observation, a period of twenty-three years, without showing any material advance in the progress of the disease.

The personal history is that of a strong, healthy man, without excesses of any kind, leading a quiet home life and attending to his business duties every day for over forty years. There is no history of any traumatism or exposure to wet or cold. Venereal disease is denied and inquiries as to his heredity does not reveal the presence of tuberculosis, syphilis or nervous disease in the family.

The first symptoms were noticed thirty years ago (October, 1878, to January, 1879), which came on gradually, consisting of general debility, a wornout, tired feeling and dizziness. He was inclined to lie down most of the time, but never felt rested. About the same time he observed that his arms and hands were growing weaker and that he could not use the awl so well in making shoes. No change was noticeable at this period in the appearance of the shoulders, arms or hands. In January, 1879, the voice became husky and he has spoken in a harsh, unequal tone ever since. Six months later (June, 1879) sensations of numbness and cold appeared in the left shoulder, which gradually extended to the neck, arm and hand of the same side. This sense of numbness was especially severe and troublesome on the left side of the neck, so that he often resorted to very hot applications for relief. On one occasion after the removal of a poultice it was discovered that his neck had been badly burned, though at the time

<sup>1</sup> Read at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1900.



he had not noticed any sense of pain. After this, moreover, he frequently received cuts or injuries on his hands, without knowing it at the time, until his attention was attracted either by the flow of blood or ulceration. About September, 1879, a decrease in size and a difference in shape of the shoulders were noted, the left being more prominent than the right. This atrophy of muscles, first noticed in the deltoids, slowly progressed, involving the trapezii and scapular muscles, the interossei of the hands and still later the latissimus dorsi, the pectorales and extensors of the arms. In October, 1885, a painless ulcer formed in the helix of the left ear, which went on to perforation, some time elapsing before it was healed. During the next three years, while under my observation, there gradually developed an increase in the muscular weakness, with atrophy, a sense of heaviness in the tongue and difficulty in swallowing.



FIG. 1.

*Examination.*—The patient is a man of medium size, weighing one hundred and forty pounds. He speaks in a harsh, impure and unequal tone. On the left side of the neck is a keloid scar, the result of a burn and on both hands several other scars are noticeable, besides fissures and abrasions which heal very slowly and imperfectly, remaining some time as open sores and he states these cause no pain (Fig. 1).

*Nervous System—Motor Functions.*—With eyes open he shows no ataxia in gait or on standing, but with eyes closed the equilibrium is not good. There is marked weakness in the upper

extremities and the movements are imperfect and limited. The grasping power of the hands is weak—right 18.20, left 18.11 and compared to the test made twenty years ago, viz: right 30.32, left 28.26, quite a difference is shown. The little and ring fingers of the right hand are slightly flexed and their movements are limited. All the interossei are wasted, especially the third and fourth of the right hand. The muscles attaching the upper extremities to the trunk are also much atrophied and this is more marked in some muscles and in some parts of muscles than in others; the lower part of the trapezius is much more affected than the upper, the upper part of the pectorales more than the lower. The left cheek feels thinner and less firm than the right, and there is marked narrowing of the palpebral fissure of each eye with enophthalmos. There is no appreciable difference between the two sides of the tongue, though the patient states that the left side does not feel as natural as the right. When the tongue is protruded to its fullest extent it deviates slightly to the right. There is a paralysis also of the palate, the uvula being sharply drawn to the right. An examination of the throat shows a complete paralysis of the left superior constrictor of the pharynx and of the left palato-pharyngeus. There is also found a paresis of the adductors of the left vocal cord. The mechanical irritability of the atrophied muscles is increased and fibrillary twitchings frequently occur.

Electrical examination reveals a general reduction in the strength of the contractions produced both with the faradic and voltaic current. The inferior segment of the trapezius fails to contract with the strongest faradic current. Moreover the only muscles which give a true reaction of degeneration are the interossei and the thenar and hypothenar groups. The musculature of the lower extremities is firm, no wasting being present.

*Reflexes.*—The patellar tendon reflexes are exaggerated; the deep reflexes are normal and the Babinski not obtained. There is no clonus.

*Sensory functions.*—He complains of feeling cold and states that the left side of face, head, neck and both hands are numb. The skin of the left side of the face, arm, shoulders, forearm and both hands, also left side of trunk and neck, as far forward and backward as the median line and as far downward as the fourth rib in front and the sixth rib behind, is anesthetic; a region corresponding to the distribution of the cervico-brachial plexus, of the intercostal and fifth cranial nerves (Fig. II). This region of insensibility is somewhat ill-defined on the trunk behind, but on the face its limits are sharply defined. On the right side there is no loss of sensation except on the bridge of nose and forehead, just over the median line, but on the dorsum of the right hand, over the anterior and lateral aspects of the arm, the sensation is not natural. There is also marked analgesia occupying the same

distribution as the anesthesia, with the preservation of tactile sensibility in many places. Pressure, localization and muscular senses are normal.

*Sensibility to Temperature.*—There is a complete loss of temperature sense over entire circumference of hands and left side of neck, partial over both deltoids, anterior and lateral aspects of arms and forearms, and left side of face. Sponges dipped first in hot, then in cold water, water test tubes containing hot and cold water, were made use of in these tests. Warm objects seem cold in various areas and in certain places the test tube of hot water was frequently recognized after prolonged contact.



FIG. 2.

*Special senses.*—The senses of taste, smell and hearing are not impaired. His vision is not acute and he has to look at an object some little time before recognition is complete. The pupils are small, but active to both light and accommodation. The movements of the eyes are normal and there is no nystagmus. The ophthalmoscope does not show any changes in the fundus of either eye.

*Diagnosis.*—From the character of the symptoms—motor paralysis with atrophy, trophic changes, anesthesia, analgesia, thermoanesthesia with the preservation of tactile sensibility in many places, there remains no doubt as to the diagnosis being other than that of a syringomyelia from a gliosis. Furthermore, this process at first localized in the cervical enlargement has extended, so as to involve the tenth, eleventh, twelfth and fifth cranial nerves.

# ENCEPHALITIS: TWO CASES WITH NECROPSY<sup>1</sup>

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(*From the Neuropathological Laboratory of the Medico-Chirurgical College*)

The clinical and pathological status of acute inflammatory diseases of the brain has been well established by German writers, and in the English literature there are a few well reported cases. It will be unnecessary to review the literature of this subject since it has been so recently and thoroughly done by Oppenheim and Cassirer.<sup>2</sup>

According to those who have studied the subject, encephalitis is not as rare as is generally supposed, it being generally unrecognized or mistaken for some other organic or even functional disease. The cases here reported confirm this view as neither was recognized clinically, although both were carefully studied under favorable conditions. How reasonable it is to suppose, therefore, that many cases are undiagnosed in the practice of the general practitioner.

Two principal types are generally accepted in the classification of encephalitis: (1) the so-called polioencephalitis superior and inferior, described by Wernicke<sup>3</sup> in 1881, in which the disease is located in the gray matter about the aqueduct of Sylvius and the third ventricle (superior), or in the gray matter surrounding the fourth ventricle (inferior); and (2) the form involving the cerebral cortex, and to a less extent the white matter and the basal ganglia, to which attention was first directed by Strümpell<sup>4</sup> in 1884. The pathology of the two forms is much the same, and, on account of the capillary congestion, the exudation and the minute hemorrhages that are so prominent, the condition is frequently designated as acute encephalitis of Wernicke, or of Strümpell.

<sup>1</sup> Read before the Philadelphia Neurological Society, November, 1908.

<sup>2</sup> "Die Encephalitis," second revised edition, 1907.

<sup>3</sup> "Lehrbuch der Gehirnkrankheiten," Kassel, 1881.

<sup>4</sup> Magdeburg, Naturforscher Versam., 1884.

In Wernicke's form the principal etiological factor seems most frequently to be some intoxication, such as alcoholism or ptomaine poisoning. In Strümpell's type the cause is almost always some infection which may occur during or following an infectious disease, or it may be primary. It has most frequently been reported in association with influenza, or as primary encephalitis during influenza epidemics without the ordinary symptoms of the latter, though it has been recorded with almost all of the acute infections.

The two cases here reported were of the cortical or Strümpell's type, and were in the Nervous Department of the Philadelphia Hospital in the service of Dr. C. S. Potts, to whom I am indebted for the notes and pathological material.

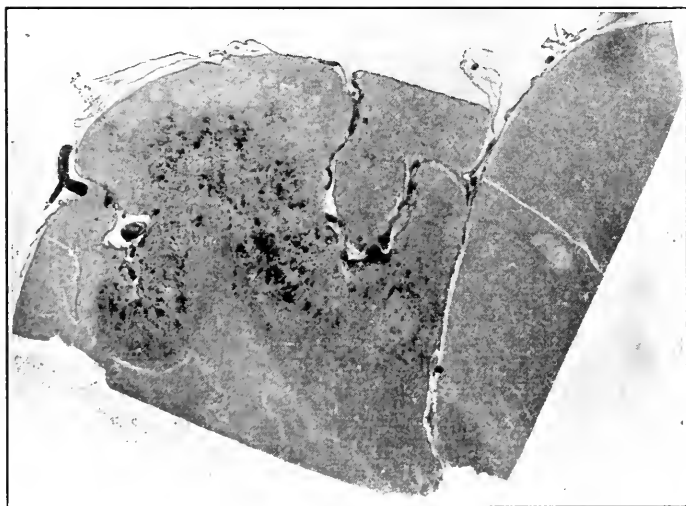


FIG. 1. Case 1, Encephalitic area in cortex (magnified about 6 diameters).

CASE 1.—D. L., 75 years, was admitted to the detention ward for alcoholism on April 9, 1907. Nothing of importance was elicited in the history except that he had used alcohol to excess, especially for the preceding month. Fifteen days before admission he had a stroke affecting the left arm, leg and face. Notes of the examination on admission stated that the patient was well nourished, and the pupils reacted poorly to light and accommodation. The chest was emphysematous, abdomen distended, and the heart action irregular, with a systolic murmur at the apex and a diastolic at the base. The pulse was small and irregular.

He was unable to move the left arm or leg, the lower part of the face was drawn to the right, and the tongue was large, flabby, and protruded to the left.

The patient died five days after admission during which time the following symptoms developed: Incontinence of urine and feces; conjugate deviation of the head and eyes to the right; increasing stupor from which he could be only partially aroused; and toward the last, coma, Cheyne-Stokes respiration and edema of the lungs. The pulse was irregular and varied from 100 to 120 per minute, and the temperature from normal to  $100\frac{2}{3}^{\circ}$  F. The urine showed nothing abnormal excepting a few granular casts.

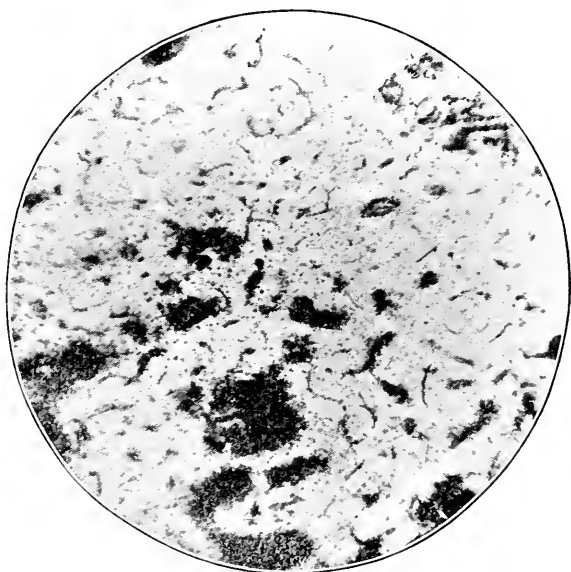


FIG. 2. Same as Fig. 1. (Two third inches objective.)

Necropsy was performed about twenty-four hours after death and the following pathological diagnosis was established: Multiple anemic infarcts of the kidneys; acute vegetative endocarditis; mitral and aortic incompetence, cardiac hypertrophy and myocarditis; edema and congestion of the lungs; and anemic infarcts of the spleen. Externally the brain showed nothing pathological. Specimens were preserved in 4 per cent. formaldehyde. Horizontal sections of the hardened brain at different levels demonstrated several discolored areas of mottled appearance in the cortical gray matter, varying in extent from the size of a pea to that of an almond. Four of the largest macroscopic areas were located as follows: One in the right inferior parietal convolution, one in the right first occipital, one in the left second

frontal, and the largest in the left occipital lobe near the calcarine fissure. The brain tissue of the right hemisphere in the neighborhood of the central convolutions was softer in consistency than the rest of the specimen, and on dissection the middle cerebral artery of this side was found to be occluded where it divides into three branches, in the fissure of Sylvius.

Sections of tissue from the diseased cortical areas, the internal capsules, pons, medulla oblongata, spinal cord and the middle cerebral artery at the point of thrombosis were mounted in celloidin and stained by the hematoxylin-eosin, van Gieson, Weigert, thionin and Marchi methods, and the following microscopic changes were found: The middle cerebral artery was filled by a partially organized thrombus, and its walls were the seat of extensive round cell infiltration. The diseased areas of the cortex were full of engorged arterioles and capillaries, some of which had ruptured, causing minute hemorrhages into the brain substance. In these areas were found a few mononuclear cells resembling lymphocytes, also numerous larger cells with single nuclei whose protoplasm contained granules staining black with osmic acid. No polynuclear cells were seen. The Weigert stain showed the absence of myeline in areas which were fairly sharply outlined, corresponding to those showing macroscopic discoloration. The Marchi stain demonstrated many granular cells and partially destroyed myeline sheaths. The ganglion cells in the center of the hemorrhagic areas were destroyed, but at the margins of those areas the cells were swollen and in various stages of chromatolysis with displaced nuclei. A short distance from the inflammatory foci the ganglion cells appeared normal as did the other tissue elements. In the internal capsule of the right side the fibers of the posterior limb showed degeneration by the Marchi method, and stained poorly by Weigert. Sections in the pons, medulla oblongata and spinal cord showed nothing abnormal.

In this case there were no distinctive symptoms to lead to a diagnosis of encephalitis, as the hemiplegia was undoubtedly due to thrombosis of the middle cerebral artery, and the other symptoms might have been ascribed to alcoholism, or the cardiac and pulmonary conditions, especially when the age of the patient, 75 years, is considered. The etiology seems to be directly traceable to the endocardial condition, which was probably of an infectious nature, and was also the cause of the multiple infarcts found in the kidneys and spleen.

CASE 2.—A. McA., female, 20 years of age, was admitted to the Nervous Wards of the Philadelphia Hospital May 18, 1907. Nothing of importance was elicited in the family history. She had one living child and had had two miscarriages. During the previous year she had had a cough and a pain in the chest, and had lost considerable weight.

Two weeks before admission, on attempting to rise from a

chair, she fell back and found that she had partially lost power in her left arm and leg. There was no loss of consciousness, and the face was not affected. In the course of a week she was able to walk a little with the aid of a cane, but fell on trying to go down stairs, and was not able to walk afterward. Incontinence of urine and feces developed a few days later.

*Examination on admission.*—Emaciated young woman in a stuporous condition. The pupils were unequal, the left being somewhat dilated, both reacting to light. The left eyeball deviated outward, but there was no other apparent involvement of the cranial nerves. The grip and the resistance to passive movements were diminished in the left upper limb as was also the resistance to passive movement of the left lower limb. All of the tendon reflexes of the left side were increased; the plantar reflex was normal on the right, no response being obtained on the left. Tactile sensation could not be tested on account of the patient's mental condition. Physical signs were found of extensive tuberculous disease of the lungs.

The day after her admission she developed a rise in temperature to  $103^{\circ}$  F. with rigidity of the neck and positive Kernig's sign. Three ounces of clear fluid were withdrawn by lumbar puncture, tubercle bacilli being found. The following day the mental condition improved, and she was able to talk and observe her surroundings, but complained of headache and was very irritable. Babinski's sign was obtained on the left side. For the next four days she remained about the same, after which the temperature increased and she became delirious. The delirium changed to stupor, and that in turn to coma, the patient dying three days later, or nine days after her admission to the hospital. The clinical diagnosis was tuberculous meningitis and cerebral thrombosis.

At necropsy the diagnosis of pulmonary tuberculosis was confirmed. On the surface of the brain an exudate was visible covering the pons, extending upward along the fissure of Sylvius, and along the course of all the large vessels.

The specimen was preserved and examined by the same methods as in Case 1. The hardened brain presented marked pial thickening and adhesions, especially at the base, the left motor oculi being bound down and flattened by the dense adhesions. The dura was much thickened and adherent to the cortex along the median fissure on both sides, the adhesions extending on the right to a distance of one and a half inches from the median line. Horizontal sections of the right hemisphere demonstrated an area of dark mottled appearance, somewhat similar in aspect to a purpuric spot in the skin, about an inch in diameter, situated in the upper central and paracentral cortex, extending forward into the frontal lobe, and downward to about the level of the corpus callosum.



Microscopically the pia was thickened over the whole surface of the brain, especially over the diseased area of the cortex, the base of the brain and the upper portion of the cervical cord, which was the only part of the cord obtained. The round cell infiltration in the pia was intense. Lying for the most part outside of the infiltrated pia at the base were masses of new large connective tissue cells. In most of the cranial nerves and especially in the left motor oculi, a few degenerated fibers were demonstrated by Weigert stain, and the sheaths and septa were infiltrated by small round cells.

The diseased area of the cortex presented a somewhat different appearance from that of the other case, in showing evidence of extension of the inflammation from the meninges, and being centered somewhat definitely about the sulci. The center of the lesion contained many small areas of homogeneous appearance which stained poorly; surrounding these were large masses of small round cell infiltration, and beyond, many engorged arterioles and capillaries and occasionally extravasations of red blood cells. At the outer edge of this area of engorgement, normal nerve elements began to appear, first fibers and then ganglion cells. There was some cellular infiltration throughout the entire lesion, especially along the blood vessels, the cells being mostly of the small mononuclear type, a few large granular but no polynuclear cells.

In this case the meningitis and encephalitis were undoubtedly secondary to tuberculous foci in other parts of the body, the infection being distributed by means of the blood or lymph currents.

In reviewing the important features of the cases here reported, it will be noticed that in Case 1 there was practically nothing to suggest the presence of encephalitis. In the first place, this disease is rare at the age of 75, and then the slight rise in temperature and the mental symptoms, which were probably due only in part to the encephalitis, were naturally ascribed to the cardiac disease, the alcoholism and the cerebral thrombosis; visual symptoms that might have been caused by the lesion in the left occipital lobe could not be demonstrated because of the patient's mental condition.

In Case 2, the age of the patient, the history and the symptoms were more significant. If the patient had been under observation earlier it is probable that tuberculous meningitis could have been diagnosed before the cerebral symptoms appeared, as the pathological examination showed increase of fibrous tissue in the meninges that must have taken some time

to develop. Of the cerebral symptoms, the motor paralysis was the first to appear, and according to the history, came on suddenly, both of which circumstances are unusual in encephalitis; but the incomplete and progressive character of the paralysis, its presence in association with an infectious disease and meningeal symptoms, in the absence of cardiac lesion or syphilis should have indicated its encephalitic origin.

# Society Proceedings

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## AMERICAN NEUROLOGICAL ASSOCIATION

THIRTY-FIFTH ANNUAL MEETING, HELD AT NEW YORK CITY, MAY 27-29, 1909

The President, DR. S. WEIR MITCHELL, in the Chair

Dr. Mitchell delivered the presidential address to the Association. (*See this Journal*, p. 385.)

### DISTRIBUTION OF ENCEPHALIC HEMORRHAGES

By S. D. W. Ludlum, M.D.

An examination of about 125 cases of hemorrhage in the brain, showing the number, proportion, and position of arteries commonly rupturing and the areas most frequently the seat of scars and cysts of old hemorrhages and the parts commonly selected in cerebral softening.

### A STUDY OF ERRORS IN THE DIAGNOSIS OF GENERAL PARESIS

By E. E. Southard, M.D.

Two hundred and forty-seven cases of mental disease have passed through the daily clinics of the Danvers Insane Hospital and later come to autopsy during the years 1904-1908. Sixty-one of these were diagnosed clinically with more or less certainty as cases of general paresis, and forty-one of the sixty-one as absolutely certain. Thirty-five of the forty-one were confirmed by autopsy, and two more appeared at autopsy although unsuspected during life. These two unsuspected cases and the six erroneously diagnosed cases have been specially studied. Tabes and cerebellar arteriosclerosis, in the presence of mental symptoms, are shown to be two main causes of error in the positive diagnosis.

Dr. J. K. Mitchell asked whether any of these cases presented undoubted combination of tabes with general paresis.

Dr. Southard replied that one of the cases he reported showed a combination of tabes and general paresis, but in a number of cases a lesion was found in the spinal cord in association with the characteristic changes of general paresis.

Dr. Herman H. Hoppe read a paper with the title: A Critical Study of the Sensory Functions of the Motor Zone (Pre-Rolandic Area) More Especially Stereognosis. (*See this Journal*, p. 513.)

Dr. Morton Prince said he thought the question of astereognosis is, after all, a question of facts and of logical induction from the facts. We are only justified in drawing inductions so far as the facts logically warrant. Dr. Hoppe's cases were exceedingly interesting, and it is well to

have a new discussion of the subject. Dr. Hoppe had not, however, quite correctly stated Dr. Prince's position regarding the problem of the localization of stereognostic perception. The point which Dr. Prince had previously made was based on the evidence available at the time of his studies. It was that there were no cases at that time on record of astereognosis in which there had not been in addition an impairment of the power of localization of the tactile sense, or the impairment of that complex which is called the muscular sense, or both. In every case on record there had been a greater or less disturbance of one or more of these subsidiary perceptions,—of localization, of the perception of position and movement of the joints, etc. Now it is evident that it must be absolutely impossible for any person to recognize the form of an object (stereognosis) and still more to recognize an object (symbolia) without having the proper sense impressions required for that recognition. It is certainly true that if there is an impairment of the muscular or tactile sense sufficient to deprive a person of the requisite amount of information, it would be impossible for him to determine by palpation what any given object is; just as it is impossible for a blind person to determine the nature of an object by sight when he cannot see it. We all know that there have been a number of cases on record of asymbolia and astereognosis where there has been no loss of the tactile sense. (By "asymbolia" is meant a loss of the power of recognizing objects, as distinct from the loss of power of recognizing form in three dimensions, or "astereognosis.")

But with complete preservation of the tactile sense, even when determined by the most delicate tests, there may be marked disturbance of the power of localization. The lightest touch may be felt, but it may be wrongly localized. As for example, a touch on the thumb might be felt in the little finger. Also, with such preservation of the tactile sense there may be marked disturbance of the perception of position, movement, etc.

Dr. Prince stated that he had reported a case presenting such phenomena and had seen others, and he believed that all the cases thus far reported of astereognosis and asymbolia with preservation of the tactile sense, which had been sufficiently accurately tested, were of this character. In other words, there was lacking sufficiently exact sensory information to enable the subject to determine the form and character of the object. The point he wished to make was that, to determine whether or not there was loss of the perceptions of position, localization, etc., very accurate and careful tests must be made, and they must be made by definite, precise methods. He had found that sometimes a person might be able to localize by one test and not by another, because each test depends upon a different kind of information. A person, for example, might be able to localize by the Volkmann ("looking procedure") and not by the Weber ("groping procedure") or by the "naming" tests, as he had shown.

It is necessary, therefore, that very accurate and careful observations should be made to determine the facts—whether or not there is impairment of sensory information—before we can draw a logical induction from assumed facts. So long as astereognosis can be explained by the loss of sensory impressions we are not entitled to infer a stereognostic faculty which can be localized.

Dr. Hoppe has presented a number of interesting cases which apparently favored the view that the recognition of objects can be abolished

with complete retention of all the subsidiary sensory impressions. Dr. Prince, however, did not understand that, although tactile sensibility was preserved in these cases, precise tests had been made to determine whether or not there was an impairment of the perception of localization and of the various elements of the so-called muscular sense.

In regard to the case reported by Poggio, the speaker was not familiar with that case, but understood from Dr. Hoppe that the report did not contain any mention of the tests that had been made to determine the loss of muscular sense, etc. A report of that kind, therefore, could not be accepted as establishing such an important point as the localization of the stereognostic sense.

If, after all the tests at our disposal to determine disturbances of localization and of the muscular sense have been made in Dr. Hoppe's cases and those of others, it shall prove that astereognosis and asymbolia are present without disturbance of these forms of perception, then there will be no escape from the conclusion that recognition of form and objects can be abolished alone without disturbance of the subsidiary sensory impressions. We shall then perhaps be justified in localizing stereognosis and symbolia, but not till then.

Dr. Philip Coombs Knapp said that after listening to Dr. Prince's explanation, he would like to inquire how the Volkmann test can have anything to do with the sense of position, that he was mixing up sense of position with ability to localize.

Dr. C. K. Mills said with regard to cases such as Dr. Hoppe reports in the paper from his own experience, and that of others in which astereognosis was present with subcortical lesions of the pre-central convolution—and as Dr. Mills understood Dr. Hoppe, of the convolutions anterior to the precentral—we need information on various points before deciding as to their absolute value.

The operative cases cannot be absolutely depended upon with regard to the extent of destruction and the influence exerted by the lesion. We have to take into consideration reaction at a distance along certain anatomico-physiological lines. Undoubtedly the motor region is connected by associated fibers with the stereognostic area and also doubtless with sensory centers in the post-central and perhaps other convolutions. We have in these cases the abeyance or the loss of such a sense as stereognosis. The cases are extremely rare, but exist, in which astereognosis is present without impairment of contributing senses. One of the cases reported by Dr. Hoppe would seem to be of this sort.

Dr. William G. Spiller remarked that we must be careful in reaching conclusions after operation on the brain regarding the function of the part operated upon. Not only is there disturbance in function of associated areas, the diaschisis of von Monakow, but there is also disturbance in function from handling, or exposing the brain. In excising any diseased portion of the brain it is necessary to tie the vessels supplying that portion. As a result of this the circulation is disturbed in adjoining areas, and Dr. Spiller believes softening may occur, possibly only in a small region.

Dr. F. W. Langdon said that as bearing upon the existence or non-existence of a special stereognostic center it occurred to him to place on record an observation of his own made some ten or twelve years since, at the Cincinnati Municipal Hospital. A man was struck by a stone, which made a little punctate fracture over the parietal region, correspond-

ing presumably to the arm or hand center. To ordinary tests there was no apparent anesthesia or marked paralysis; but it was interesting to note that when a silver dollar was put in the contra-lateral hand he would say "that is a half-moon," put in the other hand he would say "that is a dollar." He was illiterate and did not possess sufficient education to speak of a half-circle, but translated the impression he received from the dollar as "a half-moon." That would not have corresponded to loss of tactile sense in one or more fingers. He was a brick layer by occupation. This might be called a partial lesion of the stereognostic center.

Dr. B. Sachs thought that an experience he had recently might throw a little light on this subject, referring to a young woman whose history was remarkable in several ways. The case had to be operated on at the hospital some three or four weeks ago. This woman presented only the following symptoms: The general symptoms of brain tumor, double optic neuritis, etc., were present and very slight involvement of the upper extremity. The astereognosis was complete, there was absolute loss of all sense of the muscular movements. In this case the astereognosis was by all means the most pronounced symptom. The paresis was so slight that except for detailed examination it might have escaped altogether. The stereognosis was the one single symptom. Basing the location on that fact Dr. Sachs suggested that the surgeon operate over the arm center, but that he keep as far posteriorly as possible. A tumor was found in this case caudad of the arm area, which was carefully localized and tested with electric current. In that case the tumor was unquestionably posterior to the central fissure, but invaded a considerable portion of the cortex of the parietal region. The surgeon thought the tumor was too large for complete removal and only a part of it was excised.

The other point he wished to refer to aside from localization, was the interesting fact that within twenty-four hours of the time of operation the astereognosis disappeared entirely, although it had been tested for innumerable times carefully before that. The paresis, however, remained exactly the same as before the operation and is practically the same to this day. These facts he thought might be of some interest as showing the independence of these sensory phenomena from the purely local symptoms, and also the rapid disappearance of the symptom after operation. Altogether the rapid disappearance of symptoms after operation is something we should pay attention to. The tumor was a glioma of the brain of the slowly growing sort.

Dr. Zenner mentioned a case in some respects like that described by Dr. Sachs, a case with some hemiplegia and decided astereognosis. A tumor pressing upon the parietal lobe was removed. The patient died some five days later, probably from the shock of the operation, during which time there was distinct increase in the motor paralysis, and, apparently, some improvement in the stereognosis.

In answer to Dr. Prince, Dr. Hoppe stated that he employed only the ordinary tests in determining the presence or absence of sense of touch, muscle sense, etc. Sensation in all of its qualities, except the stereognostic perception, was normal. Dr. Zenner mentioned that in the case which he also saw, muscle sense was lost. There is no mention of loss of muscle sense in the history of the case. As far as the lesion not being persistent is concerned, the loss of stereognosis was present until the woman went home. Dr. Hoppe stated that he had not been able to make an examination since, he had written to the local physician, but received no answer.

In the case referred to, of exsection of the cortex, there was no tying of the vessels previous to the removal of the cortex. Dr. Hoppe said he wished to call attention to one thing in these cases, both the operative cases of tumor and the operative cases of resection; that stereognostic perception was not lost before the operation, but was lost after the operation in all cases.

So far as Dr. Langdon's question was concerned, he interpreted muscle sense in the sense of position.

### THE TYPE AND DISTRIBUTION OF SENSORY DISTURBANCES FOLLOWING CEREBRAL LESIONS

By Carl D. Camp, M.D.

Dissociation of sensation frequently follows cerebral lesions. The type of dissociation is not constant, but probably depends on the location of the lesion. The disturbances of sensation are usually confined to one side of the body, but some cases apparently show that there is re-representation in the cerebral cortex of the sensory distribution of spinal segments. Report of a case in which there was marked dissociation of sensation and in which the spinal segmental sensory representation in the brain is strongly suggested. Review of the literature.

Dr. S. Weir Mitchell suggested that the Association appropriate a single hour or more, as may be desired, for a discussion of therapeutic measures. This may be readily done, and in an interesting fashion, by choosing one subject, say the treatment of epilepsy, or the treatment of precedent conditions, such as determining the oncoming of the epileptic attack. For example, the question might be asked, how do the members treat their ordinary cases of epilepsy. Dr. Mitchell said he would like to know the measures employed for chorea, and what is done to treat the spastic conditions that follow apoplectic seizures. Dr. Mitchell continued: "Among you there may be some ingenuities of thought which all of us are not aware of. I hope the council will take it up, if it seems in their opinion wise, and at all events it will be better than listening to so many papers which are chiefly diagnostic or merely observational, without a single thought that is not surgical on the subject of therapeutics, for after all what we do in our clinics and consultation rooms is to tell people to *do* something. I want to know what you say to people about certain diseases."

### INVERSION AND INTERLACING OF THE COLOR FIELDS, AN EARLY SYMPTOM OF BRAIN TUMOR

By Harvey Cushing, M.D., and James Bordley, M.D.

In a series of some two hundred cases of brain tumor, in which careful perimetric examinations have been made of the visual fields, it has been found that color inversion, or interlacing of the color fields—a sign thought to be characteristic of hysteria—is a very common and, indeed, a usual phenomenon. It is believed that the sign is of value in the early diagnosis of brain tumors. The condition is presumably associated in

some way with the increase of intracranial tension, for when tension is relieved by simple decompressive measures the normal relations of the color fields are often rapidly restored.

Dr. M. Allen Starr asked whether this condition, that is the interlacing of the color fields, had been observed in ordinary choked disk following nephritis.

Dr. C. K. Mills said Dr. Cushing's paper was most interesting and valuable and one which he thought could well bear considerable discussion. For a good many years he has noticed the occurrence of changes in the visual field similar to those to which Dr. Cushing has called attention in cases of brain tumor, and not only in cases of brain tumor, but in at least a few cases of other organic lesion. In 1898 Dr. Keen operated upon a parietal tumor, the report of which was presented to the American Neurological Association in the same year or the year following. In that case Dr. Mills contended for the existence of a brain tumor in the parietal lobe, but the consultants, some of them, at least, believed that the case was hysterical and one of the reasons for believing that it was hysterical was the observations of the ophthalmologist, who reported that the reversals and contractions in the visual field were similar to those observed in hysteria. Dr. Cushing indicates that the visual phenomena referred to in his paper should be ranked as among the general symptoms of brain tumor. There was one thing to which Dr. Mills thought enough attention had not been directed in the paper. He noted that most of the cases as shown were growths in a region where one would naturally expect them to be, if the usual symptoms were in part at least to be classed as focal. In brief, we should discriminate as to how far such symptoms are focal and how far they are general.

Dr. B. Sachs stated that it was now five or six weeks since Dr. Cushing made him acquainted with his work on color fields, and during that time at Mt. Sinai he has had five cases of intracranial tumor in which this matter was put to a careful test. The examination was made by an ophthalmologist, who was not told of any desire to corroborate Dr. Cushing's findings. The ophthalmological examinations were made by several men and in every one of these cases examined what Dr. Cushing claimed was found. There was inversion of the color fields and interlacing of the color fields, so that even at this date the experience, though small, impressed Dr. Sachs with the correctness of the claim Dr. Cushing made regarding the importance of this early symptom. In two of these cases with which Dr. Sachs was especially connected the tumor was verified by operation. One of these tumors was in the motor area, the case to which Dr. Sachs referred in discussion; the other was a cerebellar cyst. In a tumor of the motor area the tumor could not possibly have involved the optic nerve tracts in any way, nor would the cerebellar cyst have been likely to involve them, so that the further impression he received was that this sign of Cushing will in all probability have to be taken as one of the general symptoms of brain tumor and not a symptom which necessarily has anything to do with the visual tracts.

Another fact of interest was in the case of cysts of the cerebellum, the change was found only in the eye on the side on which the cyst was found and the color fields became normal in that eye.

In the other cases, also, in which the tumor was not wholly removed, there was a return to the normal color field shortly after the operation. So that from that experience, which he said he gave simply as a pre-



liminary report and as a corroboration of Dr. Cushing's claim, he was inclined to think that Dr. Cushing has given us a very valuable and early symptom of brain tumor, the importance of it he thought could not be overestimated, and if it appears long before other symptoms he thought we should be doubly grateful for this contribution.

Dr. George L. Walton said that the importance of this communication can hardly be overestimated as offering practical aid in the diagnosis of organic from so-called functional cases. Dr. Walton has not studied the reversal and interlacing of fields in brain tumor, but he has seen the long-standing hemianopsia with achromatopsia in the preserved field for form, in a case of tumor of the pituitary body. The visual symptoms long preceded those suggesting tumor, and appeared many years before changes discoverable by the ophthalmoscope. They were mistaken for an unusual form of ocular disturbance accompanying migraine—for the patient had been subject to recurring one-sided headaches for a long term of years.

Dr. J. J. Putnam said that he remembered reading, some years ago, a careful French study of the sensory disturbances in organic brain disease, in which it was maintained that the peculiar distribution of these disturbances really indicates a condition of hysteria, and the question is whether these two conditions are not present in conjunction, oftener than we are in the habit of supposing. In other words, perhaps what we have to do with, in many cases is not an anatomical lesion representing the destruction of a certain tract or a certain center, but rather the lowering intension of a coordinated function, conjoined with the results of an attempt on the part of the organism to reestablish the broken equilibrium.

In reference to what Dr. Cushing had said regarding hemianopsia, Dr. Putnam said he had just had an opportunity of studying a basal brain tumor with hemianopsia associated with marked impairment of the sensibility in the distribution of the fifth nerve. To his surprise, after a decompression operation, not only did the visual field, which had been very much restricted, enlarge on the side where it had been partially preserved, but on the side where it had been wholly lost it began slowly to reappear and eventually became normal. At the time of the operation the hemianopsia had been present for as much as a year. Choked disc, with a high degree of swelling, had also been present, but this too had subsided since the operation, and has now disappeared, leaving only a slight amount of atrophy on one side.

Dr. J. K. Mitchell said that in 1893-4, in the course of a special study made with Dr. de Schweinitz, on contraction and reversal of the visual and color fields in hysteria, in two cases of spinal injury, one displaying distinct evidence of organic injury in the cervical region, the other with an old history of trauma but no symptoms, other than hysterical ones, at the time of examination, marked reversals and contractions were presented by both patients. He considered it was not very creditable to his own diagnostic acuteness that such cases had not been further studied.

In some other disease, tabes for example, like alterations are found at times.

Dr. Mitchell said that as Dr. de Schweinitz, who has had enormous experience in these cases, was present he would ask that he be given the privilege of the floor.

Dr. G. E. de Schweinitz said that he desired to express his high ap-

preciation of Dr. Cushing's excellent and suggestive paper. Referring to the quotation which he had made from a well known work on ophthalmology, namely, that the reversal of the order and extent of the field for white and color is positive evidence of hysteria, which cannot be simulated and is caused by no other ocular disorder, he had to say, with all due respect, that this statement was not correct. While the well-known characteristics of the hysterical field, namely, concentric contraction for white light which developed at the first examination and was not brought about by repeated examinations, together with the tubular character of the field and frequent inversion of the color lines, with a tendency of the red line to be greater in extent than the others, were significant and most useful in connection with other stigmata of hysteria, they were not pathognomonic nor entirely peculiar to this psychosis. It is a well known fact that such fields, or fields similar to them, are found in other conditions, for example, in cases of chronic headache and other organic conditions, as brain tumor and lesions of the posterior portion of the internal capsule, as had been demonstrated in the Charcot Clinic, in Friedreich's ataxia and in certain toxemias, notably those produced by lead, alcohol, mercury and bisulphid of carbon, and particularly, especially in so far as the reversal of the color lines is concerned, in nitrobenzol poisoning, as had been reported by Nieden. To these facts Dr. de Schweinitz had called attention in his article on the Psychoses and Neuroses in "The Eye and the Nervous System," edited by Posey and Spiller.

These alterations of the visual field in toxemias similar to those which Dr. Cushing has found in cases of brain tumor, were, he thought, particularly interesting, especially as they concerned the toxemias of lead and alcohol, in which doubtless there was also alteration in the vascular pressure.

Another interesting fact is the comparison of the visual fields which Dr. Cushing and Dr. Bordley have mapped in cases of increased intracranial tension with those which occur in various forms of albuminuric retinitis, inasmuch as in the last named condition, while naturally the visual field is altered according to the retinal lesions, it frequently contains blue-blind areas. Indeed, Gerhardt was of the opinion that blue-blindness might be a sign of contracted kidney. All of this is very interesting in view of Dr. Cushing's treatment of these retinal lesions by operative interference.

Dr. Cushing, in closing, said that he wished first of all to give credit where credit was due, for it was Dr. Bordley who first observed and appreciated the possible diagnostic importance of color inversion or interlacing of the color fields in brain tumors.

Dr. de Schweinitz's remarks fully answered Dr. Starr's question.

It is Dr. Cushing's view that the condition is in some way associated with tension. Perhaps the so-called albuminuric retinitis is partially due to the tension of cerebral edema, so that one might expect to find these same changes in association with so-called albuminuric retinitis. They have not had a sufficient number of cases to speak dogmatically about it.

Dr. Cushing alluded to Dr. Mills's past observations and said that he was not aware before that Dr. Mills had worked this point out and was sorry he had not known it, as it would have spared Dr. Bordley and himself a great deal of work. "But then whenever we think we have something new we always find it has been done before in Philadelphia! I doubt not that there have been a number of observations similar to those

of Dr. Mills, made in the past without full appreciation of their significance. The facts certainly cannot be widely known even in Philadelphia, because a few days ago a letter was received from a distinguished confrere in that city in relation to a patient whose visual fields had been examined—to the effect that the color inversion which was found was unusual, and furthermore that it was definitely pathognomonic of hysteria." Dr. Cushing added that this seemingly had heretofore been the general impression.

Most of the perimetric examinations, except those taken by observers who are as painstaking as Dr. de Schweinitz, are usually limited to the field for form alone, and it is only by the careful plotting of the color fields that the frequency of dyschromatopsia with tumors has been observed.

Dr. Cushing was interested in what Dr. Mills said in regard to dyschromatopsia as a general *versus* a focal manifestation, and he thought Dr. Mills had said just what all say about it, that it appears to be a general symptom, but that in certain cases the charts possess characteristics of value in suggesting the situation of the lesion. For example, we may find a hemiachromatopsia antecedent to a homonymous hemianopsia. That is, the color changes appear before the alterations in the field for form. Such dyschromatopsias are useful as focal symptoms.

As to Dr. Sachs's remarks, it is a gratification to Dr. Cushing to find that the observations have been corroborated at Mt. Sinai Hospital. One reason that led Dr. Cushing to present the result of this work was his feeling that so many patients who proved ultimately to have organic lesions were believed at one time or another to suffer from purely functional disturbances. The danger of this attitude is shown by a paper to be read before the Ophthalmological Section of the American Medical Association by a most capable ophthalmologist, Dr. Parker, of Detroit. It reports the perimetric findings in one hundred supposedly hysterical patients whose visual fields had been charted, showing frequent evidences of dyschromatopsia, etc. Looking at these fields, all of which are reproduced in the paper, one cannot help wondering how many conditions due to definite intracranial pressure are hidden among these one hundred cases.

(To be continued)

## Periscope

Journal de Psychologie normale et pathologique

(Fifth year. No. 5. September to October, 1908)

1. A New Theory of Aphasia. L. DUGAS.
2. How to Construct a Mechanical Theory of Mental Phenomena. M. AMELINE.

1. *A New Theory of Aphasia*.—Dugas here presents an abstract and criticism of Moutier's elaborate *Thèse de Paris* upon Broca's aphasia.

Broca did two notable things: He established the existence of the clinical phenomenon which Trousseau comprehended under the general term of *Aphasia*; and he gave its origin a localization. His work, having been based upon direct anatomical data, was in no sense comparable to the crude and vague theorizing of Gall. Broca's aphasia, however, in the words of Moutier, has no real scientific existence, if one means thereby a well-defined and distinct malady; for under that term are included two morbid manifestations, *anarthria* and *aphasia*.

Ever since Charcot advanced the hypothesis of distinct centers for the elaboration of mental images in order to help explain the nature of motor aphasia, verbal deafness, verbal blindness and agraphia and constructed his schemata in connection with these morbid manifestations, the disturbances of language have been so divided and subdivided that at the present moment one is asked to recognize eighteen different forms of partial aphasia (Grasset). All these complicated paradigms, artificial and arbitrary as they are, have been concocted for the purpose of pigeon-holing, as it were, the vast number of dissimilar cases that have been observed.

In medical literature there cannot be found a single case of Broca's aphasia in which, at the autopsy, there was discovered a single, distinct, sharply localized lesion at the base of the third left-frontal convolution. For a number of reasons Broca's localization of his aphasia cannot be accepted as final, especially since post-mortem examinations have so generally revealed multiple lesions of the brain, no lesion, or progressive and unstable softening. As Moutier asserts, chance has played a prominent rôle in the selection of the third left frontal convolution for the seat of Broca's aphasia. Statistics upon this point are not a little suggestive. In 304 autopsies performed upon aphasics, and published between the years 1861 and 1906, 201 showed lesions of the brain so extensive as to defy all attempts at any sort of localization. Only in 108 cases was the destroyed area at all satisfactorily localizable. Yet in not one of these cases did there exist coincidently with the clinical syndrome of Broca a positive and convincing lesion at the foot of the third left frontal convolution. Indeed, in 57 cases the foot of the third left frontal convolution was found to be absolutely intact, although the aphasic syndrome had been clear and pronounced. In 27 cases, two of which, right-handed individuals, were operated upon, Broca's center was found to be completely destroyed, although there had been no disturbance of language whatsoever.

The originality of Marie's recent and now well-known teaching rests chiefly upon this point: Broca's aphasia is a syndrome, an association of two separate and distinct clinical manifestations, the aphasia of Wernicke or *aphasia*, properly so-called, and *anarthria* or disturbance of a highly individualized form of articulation. The aphasia of Wernicke depends, of course, upon the classical lesion of the zone of Wernicke (gyrus supra-marginalis, pli courbe; first temporal). The anarthria may exist alone (the old pure or subcortical motor aphasia) or be associated with the Wernicke type of aphasia to complete the syndrome of Broca. The lesion here is to be found in the lenticular zone, comprising the quadrilateral of Marie, inclosed by four vertical planes, two of which, the frontal, pass respectively through the anterior and posterior extremities of the insula, while the other two, the sagittal, skirt the edge of the cortex of Reil and the ventricular ependyma, all four planes limiting the region in which is especially to be noted the insula, the external capsule, the lenticular nucleus and the internal capsule with the foot of the corona radiata.

Every case of Broca's aphasia will reveal at the autopsy a lesion of the lenticular zone plus a lesion of the zone of Wernicke. As to the lesion of the third frontal convolution, it may or may not be present. There seems to be, however, a peculiar fragility of this convolution, due probably to a deficiency in the arterial circulation so well shown by Marie in his chapter devoted to the anatomy of the Sylvian artery.

Both above and below the lenticular zone is not sharply bounded. Such is not the case, however, with its anterior and posterior boundaries, both of which are well-defined.

In front the zone is absolutely separated from Broca's center; behind, a narrow bridge of nervous substance unites the bottom of the Sylvian gulf on the outer side to the sphenoidal ventricle on the inner, and connects it with the territory of Wernicke. This bridge, the *temporo-parietal isthmus of Marie*, is of immense importance in the newer conception of aphasia. Every lesion in front of this bridge will produce anarthria; every lesion behind it aphasia (of the Wernicke type). As is well known Marie added to this newer explanation of aphasia the idea that to the anarthria there was associated an *intellectual* defect, a disturbance of the mental concept of speech, this disturbance being, in its last analysis, the aphasia of Wernicke.

In criticising the psychological side of Marie's theory, the intellectual deficit involved in the aphasia, Ameline affirms that the whole doctrine of mental images is responsible for the confusion and erroneous notions heretofore encountered in connection with speech and its morbid manifestations. He denies that the mind pictures to itself what it is about to do before it actually does it. He compares the mind in this respect to the function of digestion. Neither the images in the mind nor the processes of digestion precede but follow stimulation. Brain action produces mental pictures just as stomach action results in digestion. In neither case does the reverse occur. This being so, aphasia, which is now admitted to be a disturbance of intelligence, is obviously a secondary rather than a primary trouble. It has, to be sure, a definite form and is never to be confounded with a mere dementia.

Heretofore, aphasia has been made too much of as a special entity, with numerous sub-entities. We have hitherto believed too much in the special disease of speech, as though such diseases were something other

than a mere morbid manifestation of the intelligence. We have likewise laid too much stress upon the special varieties of this morbid manifestation as observed, for instance, in verbal blindness; for, in their turn, these are nothing but disorders or morbid manifestations of the general function of language.

2. *How to Construct a Mechanical Theory of Mental Phenomena.*—It is impossible to give a brief abstract of this article. The author attempts, by means of elaborate algebraic formulæ and calculations to demonstrate a correlation between the physiological findings in the study of brain activity and the psychological manifestations, both normal and abnormal. He frankly admits that his results are rather small and indefinite; and yet he believes that in this way it is possible and desirable to initiate a veritable science of psychophysics, a science of the cerebral mechanism.

METTLER (Chicago).

### Neurologisches Centralblatt

(May 1, 1908)

1. The Pupillo-motor Field of the Retina. VERAGUTH.

2. Apparently Abnormal Bundles in the region of the Pons. REICHER.

1. *Pupillo-motor Field.*—Some recent experiments by Hess seem to show that the pupillo-motor fibers of the retina occupy only a small area of about 3 mm. in diameter about the macula. Veraguth reports a case which would appear to confirm this view. From a traumatism of the orbit the patient was rendered blind in the right eye with the exception of a small island of the retina below the macula. In this area all of the elements of vision remained normal. Both pupils were round, central, and by subdued light of equal size. Direct light in the right eye, after complete adaptation to darkness, caused neither reaction in the right pupil nor consensual reaction in the left. Illumination of the left retina by the same means caused prompt reaction in both pupils. Both pupils also reacted with convergence. This condition seems to prove that the otherwise normally functioning island of the retina contained no reflex fibers, also that there was no central lesion nor interruption of the centrifugal tracts.

2. *Abnormal Bundles in the Region of the Pons.*—Ten cases have been studied in respect to the appearance of apparently abnormal bundles of nerve fibers in the region of the lower part of the pons, one with complete serial sections, the others less in detail. The author comes to the conclusion that these bundles are not abnormal, but only in anomalous position, being deviated from their usual course with larger fiber tracts. The conditions described are divided into two classes: one in which the fibers studied are apparently related to the pyramidal tracts, and are probably distributed to the motor cranial nerve nuclei; and the other in which they are in relation with the cerebellum, and with the sensory nerve nuclei. From the study of a comparatively small number of specimens he has found anomalous conditions in quite a large proportion, and thinks that it is not so very unusual.

(May 16, 1968)

1. Changes in the Spinal Cord After (a) Nerve Crossing, and (b) Nerve Grafting. BIKELES.

2. The Toe Reflex (a Special Pathological Reflex). ROSSOLIMO.

*Changes in the Spinal Cord.*—An experiment of nerve grafting and crossing was performed on a dog in the following manner: On the right side the median-ulnar nerve was severed, the peripheral end sutured to the intact radial, and the central (med.-uln.) resected and sutured to the skin. Later the left median-ulnar and radial were severed and the central end of one sutured to the peripheral end of the other and vice versa. After about seven months a portion of the median-ulnar of each side was resected peripheral to point of operation and the centers in the cord studied after killing the dog twenty-eight days later. On the right, or side of the grafting, changes were found only in the cells in relation with the median-ulnar, and which must have resulted from the first operation. On the left, or side of the crossing, changes were found principally in the motor cells normally in relation with the radial nerve, probably the result of the resection twenty-eight days before death. Examination of the median-ulnar of both sides by Weigert showed regenerated fibers only slightly less numerous on the right side than on the left.

2. *Toe Reflex.*—A special pathological toe tendon reflex is described which may be found in association with lesion of the pyramidal tracts, and is elicited as follows: The knee of the patient is slightly flexed and the leg relaxed; the toes are then pressed dorsally by a short light stroke of the finger on their plantar surface. After a varying time a wave-like motion of the toes in flexion or abduction appears in cases in which there is disease of the pyramidal tract. The following conclusions are drawn: (1) This reflex is present only in disease of the pyramidal tract. (2) It is present in many cases where Babinski's fails. (3) Its intensity is variable from a slight motion to an active clonus. (4) It is pathological whenever present. (5) It seldom appears within three weeks after the lesion.

(June 1, 1968)

1. Total Anesthesia. BREGMAN.
2. Similarity of the Human Spinal Cord to that of Animals. BIACH.
3. Hysterical Mutism. JAHNEL.
4. A case of Posterior Poliomyelitis of the Geniculate Ganglion; Additional Considerations of the Symptom Complex. HUNT.

1. *Total Anesthesia.*—Although sensory changes are so common in hysteria, a complete anesthesia is seldom seen. Bregman describes a case of loss of sensation (cutaneous, mucous membranes, taste, smell, internal organs, fatigue, etc.). Only sight and hearing were retained. Strümpell's test (causing sleep by closing the only avenues open to sensory impulses, in this case the eyes and ears) was negative. The author finds it inconsistent in reported cases of this kind, and concludes that it is a suggestive symptom and coincident with general susceptibility.

2. *Spinal Cord.*—In addition to the changes in the pathological human spinal cord simulating the normal condition in the cords of certain animals mentioned by Pick and others, the writer reports other changes that he has seen of this character. They consist of changes in the structure of the substantia gelatinosa which normally surrounds the end of the

posterior horn like a gothic arch. He found rudimentary convolutions or foldings in its formation. In the examination of fifty pathological and fourteen normal cords, some of the above changes were found in twenty-seven of the pathological and in only one of the normal cords, and conclusions are drawn that certain cords are developmentally deficient and thus predisposed to disease.

3. *Hysterical Mutism*.—The writer accidentally came across the following description in an old magazine dated 1815, which he repeats on account of its historical interest and the interesting details given of a case of what was apparently hysterical mutism. The patient, who was born in 1653, was nearly drowned in his tenth year. After this there developed a dumbness lasting at first only a short time, but increasing day by day until he could speak for only one hour in the twenty-four. For more than fifty years this condition persisted, and he was able to talk only between the hours of 12 and 1 o'clock each day, and this whether a clock were present or not. Only twice was this rule broken, each time during a high fever. For the last few days before his death he spoke at irregular intervals, and for the last day was able to speak continuously.

4. *Posterior Poliomyelitis*.—The case reported is one of herpetic inflammation of the geniculate ganglion—a poliomyelitis posterior (after Head and Campbell who use this term to designate the changes in the spinal ganglia in herpes zoster). The geniculate ganglion is a purely sensory ganglion of similar type to the spinal ganglia. Hunt thinks that its inflammation causes a symptom-complex which is a clinical entity, to which belongs several groups of cases that have until now been considered as separate types. (1) Herpes oticus: Earache, with herpes on the tympanum, external auditory canal and concha (corresponding to the zoster zone of the geniculate ganglion). (2) Herpes oticus, herpes facialis or herpes occipito-cervicalis, together with facial palsy. In this group herpetic eruption in the distribution of the fifth cranial or the first, second and third cervical is added to the above condition. (3) Herpes in one or more zones of the head, with facial palsy and deafness. (4) Herpes of the head with facial palsy and symptoms of Ménière's disease. In this group are present deafness, labyrinthine vertigo, nystagmus, nausea, vomiting and disturbance of equilibrium. These groups are different stages of inflammation of the geniculate ganglion and the neighboring nerve elements, similar to the inflammation of the spinal ganglia in herpes zoster.

(June 16, 1908)

1. The Pathogenesis of Optic Atrophy and the so-called Tower-skull MELTZER.
2. Dyspraxia in Left Hemiplegia. HILDEBRANDT.
3. The Differential Diagnosis of Central and Peripheral Facial Paralysis and the Anatomical basis for the Same. HUDOVERNIG.

1. *Optic Atrophy*.—The author has noticed the frequency of deformities of the skull with slight or no impairment of mentality in the blind, and the rarity of similar deformities in the feeble-minded with sight intact. The deformity described is the so-called Türmschädel, or tower shaped head, including oxycephalus, sphenoccephalus and scaphocephalus. Twenty cases of optic atrophy have been collected and tabulated with several illustrations of the cranial deformities. All of the cases had high skulls with circumferences comparatively small in all but one. The sense of



smell was lost in twelve cases, intelligence normal in nineteen, exophthalmus was present in eighteen, nystagmus in nineteen, and strabismus in all. As to the time of onset of the skull deformity, it was well marked at birth in one case, less well marked in twelve others, becoming greater with the onset of the blindness; in the other seven the deformity of the skull developed with the failing vision. The onset of the blindness occurred before the age of three in most of the cases, and before the age of six in all. Seventeen of the cases showed objective rhachitis, fourteen serous meningitis, six trauma, and three infectious diseases. The author thinks that the head deformities were probably due to serous meningitis in infancy causing a low grade of hydrocephalus, the pressure of which upon the bones having a tendency to rickets caused deformity in the direction of least resistance, *i. e.*, upward, and at the same time optic neuritis and atrophy.

2. *Dyspraxia*.—A case is reported in which, with a typical left hemiplegia and hemianopsia, there was a decided dyspraxia of the left hand in a left-handed patient. Dyspraxia in the left hand with right hemiplegia is not so rare. Liepmann has advanced the theory that in right-handed individuals the left side of the brain influences the movements of both sides of the body, and the converse should be true in the left-handed.

3. In considering the differential diagnosis between central and peripheral facial paralysis the author mentions the well known points of distinction, but offers nothing new.

(July 1, 1908)

1. Concerning Disturbances of the Character of Agnosia. LIEPMANN.
2. Nuclei in the Spinal Cord. JACOBSON.

1. *Agnosia*.—Continued article.

2. *Nuclei in Spinal Cord*.—From complete serial sections of the human cord, stained by the Nissl method, the author studied the nerve cells and grouped them according to classification: (1) Motor cells, (*a*) median group, (*b*) lateral group. (2) Sympathetic, (*a*) superior group (lateral), (*b*) inferior group (sacral), (*c*) inferior group (lumbo-sacral, medial). (3) Large cells of the posterior horns, (*a*) basal group (Clarke's column), (*b*) central group, (*c*) pericornual group. (4) Nucleus sensibilis proprius (of the substantia gelatinosa). (5) Tractus cellularum,—cells scattered irregularly throughout the gray matter. These groups are variously subdivided and localized, but their physiology is not considered. The article is illustrated by four diagrams.

(July 16, 1908)

1. The Vagus Nucleus in Man. BLUMENAU.
2. Spasmodic Respiratory Disturbances on an Epileptic Basis. VOLLAND.
3. Disturbances of the Nature of Agnosia. LIEPMANN.

1. *Vagus Nucleus*.—This is a short article concerning the relation to the nucleus ambiguus of groups of cells in the lateral part of the medulla, between the olivary and restiform bodies,—the "Seitenstrangkern." These cells are divided into two groups, the anterior and posterior, the latter of which appears to have a definite relationship to the nucleus ambiguus of the vagus. Examination of the medullæ of animals seems to confirm this view, although this group of cells is not as well developed in them as in man.

2. *Spasmodic Respiratory Disturbances*.—A case is reported of epilepsy at the age of 24 years in a patient who had previously had attacks of asthma. At first the epilepsy and the asthma occurred simultaneously, then for two and a half years only epilepsy (grand mal). Later, attacks of laryngeal spasm of a severe type occurred with unconsciousness, but without convulsive movements of the rest of the body. Other more or less similar cases are alluded to in literature.

3. Not suitable for abstract.

(August 1, 1908)

1. The Prospect for Recovery in the Insane Asylum. ALT.
2. A Contribution to the Symptomatology of Paralysis Agitans. PELZ.
3. The Center for the Submaxillary Gland. SOŁOMOWICZ.

1. Not suitable for abstract.

2. *Paralysis Agitans*.—A case of paralysis agitans is reported in which the attitude, rigidity, course, etc., were typical, but in which the tremor was absent during rest, developing only on voluntary movement. Similar cases are referred to in literature.

3. *Submaxillary Gland*.—After referring to previous studies along the same line, the author details the results of his examination of the medullæ of two dogs from each of which the left submaxillary gland was extirpated, one 21 and the other 26 days before death. The following conclusions are reached: (a) The center for the submaxillary gland is in scattered cells in the region of Deiters' nucleus; only a few cells in the substantia reticularis. (b) The cells which form this center occupy both sides of the medulla, with a slight preponderance in numbers on the side corresponding to the gland.

(August 16, 1908)

1. Intermittent Claudication in one Arm, one Leg, the Vocal, Eye and Laryngeal Musculature. Intermittent Claudication or Myasthenia? GOLDSTEIN.
2. Cerebellar Tumor. RAIMIST.

1. *Intermittent Claudication*.—In a woman of 44 years, with a probable history of syphilis, there developed during the course of one year a condition in the right arm, right leg, the muscles of the eyes and vocal organs characterized by a rapid fatigability and quick recovery after a short rest. Faradic stimulation caused a similar fatigue in the affected muscles after from 40 to 50 contractions. The limbs affected were abnormally rigid when fatigued by either the faradization or by voluntary movements. Eliminating myasthenia from the diagnosis, the author suggests that the myasthenic electrical reaction, which is not pathognomonic of myasthenia, may be more frequent in claudication than is supposed.

2. *Cerebellar Tumor*.—The author presents a very complete clinical history of a case of tumor in the left cerebello-pontile angle, which was operated upon unsuccessfully at a late stage. Localizing symptoms began with noises in the left ear which later became entirely deaf. Other cranial nerves were involved to a less degree. Persistent pain was present in the left side of the neck and headache of varying character. There was pain on pressure over the left small occipital nerve, and changes in sensibility in the distribution of the left large and small occipital nerves, which was emphasized as probably having localizing value. The sign described by

Stewart and Holmes (slow reaction of the arm after being passively flexed) was present on the side of the lesion. At necropsy a tumor  $8 \times 5$  cm. was found which largely displaced the left half of the cerebellum; its origin was not determined, but was probably in close relation to the eighth nerve. The microscopical examination had not been completed, but the tumor was firm, encapsulated and easily detachable from its surroundings. INGHAM (Philadelphia).

## Archiv für Psychiatrie und Nervenkrankheiten

(Band 41. Heft 3)

1. The Pathological Anatomy of Paralysis Agitans. KINICHI NAKA.
2. The Pathological Anatomical Changes of the Brain in Leprosy, Leprosy Bacilli in the Gasserian Ganglia together with the Anatomy and Pathology of the Nerve Cells of the Brain in General. STAHLBERG.
3. The Question of Amnesic Aphasia and its Distinction from Transcortical and Glossopsychic Aphasia. GOLDSTEIN.
4. A Contribution to the Study of the Dissociation of Temperature and Pain Sensation in Injuries and Diseases of the Spinal Cord. PILTZ.
5. The Effect of Climate on Epileptics. LOMER.
6. Investigations on the Widening of the Pupil as the Result of Psychic and Sensory Stimuli, Together with Certain General Observations on Pupillary Reactions. HÜBNER.
7. Processes of Healing in Softening Areas of Rarification and Cysts of the Brain. SALTYSKOW.

1. *Paralysis Agitans*.—On the basis of a careful report of two cases, Naka discusses the pathological anatomy of paralysis agitans after giving a brief historical résumé of previous opinions. As a result of the investigation the conclusion is reached that certain cellular alterations of the brain cortex and the cerebellum are presumably the cause of the symptoms. Although such changes were not marked, weight is lent to the supposition that they are causative of the condition since no sufficient alterations to account for it were found in other places.

2. *Brain in Leprosy*.—Stahlberg concludes an elaborate paper on alterations in the nervous system in leprosy with the following statements: Leprosy bacilli are seldom found in the brain, cerebellum or medulla oblongata. Leprosy both of the tuberous and nerve type leads to degenerative changes in the brain, which manifest themselves both in nerve cells and in nerve fibers. These changes cannot be regarded as specific. They are unassociated with disease of the peripheral nerves. They do not produce peripheral alterations of sensibility. In other severe chronic infectious diseases, similar alterations in the brain are found. When the leprosy bacilli penetrate the Gasserian ganglion the cells undergo a type of vacuolar degeneration which leads to their destruction.

3. *Aphasia*.—On a basis of a single case, Goldstein enters upon a most detailed and elaborate discussion of types of aphasia. As a psychological study the paper is of value. In view, however, of recently developed views of aphasia, it is difficult to establish principles on the basis of such studies. The article does not lend itself to succinct review.

4. *Diseases of the Spinal Cord*.—Piltz reaches the following general

conclusions on the basis of careful review of our knowledge regarding the course of sensory tracts in the cord. Disturbances of temperature and pain sense may be of cerebral, spinal and peripheral origin. Spinal thermo analgesia occurs in various diseases and injuries of the spinal cord. The topography of this type of anesthesia on the skin is radicular. In the spinal cord there is a distinct tract for pain and temperature anatomically distinct from the paths which subserve tactile and muscular sensibility. The localization in the cord of the tracts for temperature and pain is presumably Gowers' bundle constituted by two neurones. Further conclusions relate to the localization of lesions producing various types of disturbed sensation. The paper is of decided value as a further elucidation of this difficult subject.

5. *Effect of Climate on Epileptics*.—Lomer has attempted to bring epileptic attacks into relation with weather conditions with results which seem to indicate that there is a certain connection between the number of attacks and the degree of atmospheric pressure. It was observed for example that in those months where there was the greatest alteration in pressure there was likewise a greater number of attacks. Investigation is to be carried further.

6. *Pupillary Reaction*.—Hübner makes an elaborate study of alterations in the pupil as a result of psychic and sensory stimuli. In the investigation he draws attention to reflexes due to attention and ideas, the phenomenon of pupil unrest and psychoreactions. On the clinical side he has examined a large number of cases, largely of mental disease. The detail of this work does not permit a comprehensive abstract.

7. *Healing in the Brain*.—The subject of healing in the brain is discussed by Saltykow, who reaches the following results from his study: In the scar formation of areas of softening, both glia and connective tissue take part in the process. The gliosis and the connective tissue overgrowth are simultaneous and have the same significance. There may occur a purely neuroglia healing, and this not only in very small areas. Areas of rarification are not characteristic of multiple sclerosis as has been assumed. Typical areas of rarification heal entirely by glia formation. There are apart from the usual rarified areas which likewise macroscopically even are constituted by glia scars and have the appearance of small softenings. Perivascular cysts are essentially encapsulated with glia. Such cysts may be obliterated by glia or connective tissue in consequence of the growth of a preëxisting intralymphatic reticulum. There are the most varied transitions and mixed forms of the three types of focal lesions in the healing of which complicated atypical scars are formed.

W. E. TAYLOR (Boston).

## Review of Neurology and Psychiatry

(Vol. VI, No. 3)

1. On the Spinal Changes in a Case of Muscular Dystrophy. GORDON HOLMES.
2. The Myasthenic Reaction Experimentally Produced in the Frog. J. A. GUNN.

1. *Spinal Changes in Muscular Dystrophy*.—The patient died of broncho-pneumonia at the age of eleven, at the Queen Square Hospital,

in the service of Dr. Beevor. There were two other children with the same affection in the same family. The onset was at the age of eighteen months. The affected muscles showed the usual changes. The brain was normal. The ventral spinal roots were scarcely one-third the size of the corresponding dorsal roots and were pinkish in color. The remarkable smallness of size was most noticeable in the cervical and lumbosacral enlargements. The white matter of the cord was apparently normal. The ventral horns of the cord, however, showed a marked reduction in number and sizes of the cells. In the enlargements practically no cells of normal size were observed and many of those which persisted were atrophied and shrunken and contained an excessive amount of pigment. In the more affected cells the nuclei were small and distorted and indistinctly visible. The small size of the ventral roots was found due to atrophy and diminution in the number of fibers and corresponded to the loss of ventral cornual cell loss and atrophy. Atrophy and loss of fibers were found also in nerve trunks and intra-muscular nerves.

The author thinks the neural changes, found in this case and in similar cases observed by others, are secondary to the primary muscle disease, owing to disturbance in their function and nutrition; that the terminal branches of the axis cylinder, left naked by the disappearance of the muscle fibers, are probably injured and possibly destroyed by the connective tissue which proliferates secondarily to the muscle disease.

2. *The Myasthenic Reaction Experimentally.*—The writer states that his discovery originated in the course of an investigation of the pharmacological action of yohimbine. He found that large doses produced in frogs a condition of rapid muscular exhaustion resembling that in myasthenia gravis, and that the electrical reactions of the nerves and muscles in the yohimbinised frog were identical with those found in that disease. Ptosis in myasthenia gravis is one of the early symptoms. Yohimbine produces a corresponding elevation of the lower eyelid in the frog. Cobra poison produces a similar effect of the lids in man and frog. No lesions have as yet been found in post-mortem examinations of cases of myasthenia gravis which could adequately explain the phenomena of the disease. The writer considers his experiments to indicate that the myasthenic reaction in myasthenia gravis is due to a toxic action on the motor nerves.

(Vol. VI, No. 4)

1. The Cytological Study of the Cerebro-Spinal Fluid by Alzheimer's Method, and its Diagnostic Value in Psychiatry. H. A. COTTON and J. B. AYER, JR.

2. Exophthalmic Goitre combined with Myasthenia Gravis. G. E. RENNIE.

1. *Cerebro-Spinal Fluid.*—The Alzheimer method is regarded by the writers as the best yet devised for this purpose, its good results depending upon rapid fixation of the cells and the subsequent treatment of them as if they were tissue. A good differential and fair quantitative count are possible by this method. The plasma cell, the phagocytic endothelial cell, the fatty granule cell, and the lymphocyte (if in excess), may be regarded as of greatest diagnostic importance. General paresis shows a distinct cell picture. In the other insanities the fluids examined were nearly normal. Fatty-granule cells were found post-mortem in organic cerebral conditions. The cerebro-spinal fluid cells appear to originate in the pia.

(Vol. VI, No. 5)

1. A Case of Acute Ascending Paralysis of Syphilitic Origin. O. CROUZON and GEORGES VILLARET.

The patient was a man, age 42, who contracted syphilis at 32. After suffering for several months with sciatica on the right side, he was suddenly affected with paresis of the right leg and arm, the onset being accompanied by the symptoms of an acute infection. These symptoms were progressive for two days and were accompanied by incontinence of feces, retention of urine, disorders of the reflexes, and elevation of temperature. Then for two days there was some improvement, but finally, during the following and last three days of life, the original symptoms became more marked and there was mental clouding. At the same time, the temperature rose, the height being the same in the axilla as in the rectum. The cerebro-spinal fluid had shown lympho-cytosis. No autopsy findings are reported.

ATWOOD (New York)

### Deutsche Zeitschrift für Nervenheilkunde

(Band 34. Heft 3 and 4)

1. Contribution to the Pathology of the Brain. HOCHHAUS.
2. Tumors of the Fourth Ventricle. STERN.
3. False Localization of Pain Sensation in Compression of the Cord. REUNER.
4. Brain Tumors. BIRO.
5. Surgery of Brain Tumors. BIRO.
6. Anti-Rabic Inoculation Causing Acute Paraplegia. MULLER.
7. A Typical Form of Tabetic Gait. HAENEL.
8. Diagnosis of Spinal Tumors. HEILBRONNER.
9. Combination of Syringomyelia with Multiple Hemorrhages in the Fourth Ventricle. GRUND.
10. A Case of Disturbed Deep Perception. FALKENBURG.
11. Contribution to the Differential Diagnosis of Vertebral Tumors. ZUNIGS.

1. *Pathology of the Brain.* (a) *Multiple Glioma.*—The author reports a case of glioma which measured 20 cm., occupying the whole length of the right hemisphere. Two smaller tumors were found, one in the right temporal lobe, the other in the right frontal lobe, which were independent of the main growth. The symptoms showed remissions and exacerbations; especially noteworthy was a right exophthalmos.

(b) *Infantile Hemiplegia.*—Four weeks after an attack of measles, a child two and one-half years of age was seized with convulsions and unconsciousness, followed by R. hemiplegia. Three weeks later death occurred from broncho-pneumonia. Necropsy showed edema of the pia over the left central gyrus with meningo-encephalitis.

2. *Fourth Ventricle Tumor.*—A case is reported in which a diagnosis of cysticercus of the fourth ventricle was made. Necropsy showed a small glioma.

3. *False Localization of Pain Sensation.*—In a case of compression of the spinal cord by a tumor, at the level of the seventh thoracic vertebra, the author found that all irritation in the lower extremities was localized in a hyperesthetic area eleven, at the pressure. He ex-

plains this by the phenomenon of irradiation: the impulses carried from the spot stimulated to the area of compression irradiate to the tracts going to the hyperesthetic zone.

4. *Brain Tumors*.—The author gives an analysis of 92 cases. He agrees with Oppenheim that in the nervous system the brain is the most frequent seat of tumors, and with Bruns that 2 per cent. of all nervous diseases are brain tumors. The article is a résumé of conclusions already known.

5. *Surgery of Brain Tumors*.—The author discusses and reviews the work that has been accomplished in this field. The percentage of good results varies from 2 per cent. to 32 per cent. The size, character, and situation of the tumor, the localizing symptoms and duration of the growth must all be considered in the question as to the advisability of operations. Some of the after-effects are discussed, as well as the question of lumbar puncture.

6. *Acute Paraplegia From Anti-Rabic Inoculation*.—To the 24 previously recorded cases the author adds another. His conclusions are that it is a rare disease of the nervous system differing from true human rabies, and associated with anti-rabic inoculation; that it is characterized by acute paraplegia, with severe disturbances of micturition and defecation, sensory disturbances, loss of reflexes, presence of Babinski, and sometimes bulbar symptoms. Prognosis is good, recovery following in a few weeks to several months.

7. *Gait in Tabetics*.—Variation in the gait of tabetics occurs according to which group of muscles are affected. After entering into a description of the muscles acting in a normal movement of the leg, the writer shows how to detect a pseudo-paresis of the peronii, as well as a pseudo-paresis of the muscles between the thigh and the pelvis. He gives a detailed description of the movements necessary to be practiced by tabetics.

8. *Spinal Tumor*.—Report of a case in which the question of combined system disease or tumor of the cord had to be considered, as both hyper-tonia and spasticity were present. Necropsy revealed an extra dural tumor.

9. *Syringomyelia*.—Besides the usual finding, in the spinal cord, the process extended around the pyramidal decussation. In the floor of the fourth ventricle was found an acute polioencephalitis, hemorrhagic in character.

11. *Differential Diagnosis of Vertebral Tumors*.—Report of a case of tumor involving the vertebra, which clinically failed to show any signs of vertebral disease.

(Band 34. Heft 5 and 6)

1. A Case of *Cysticercus Cerebri* with Operation. Diagnosed by Brain Puncture. PFEIFER.
2. Clinical Contribution to the Diagnosis of Bulbar Lesions. MAUSS.
3. Further Studies in the Hereditary Degenerations. KOLLARITS.
4. Disease of the Nervous System Following Carbonic Acid Poisoning. STURSBURG.
5. Syphilitic Spinal Paralysis. RENNER.
6. Acute Ataxia. SCHWARZ.
7. Combination of Myeloma and Syphilis. Voss.

8. (a) Congenital defect of the Pectoralis Major. BITTORF. (b) A New Algesimeter. ALRUTZ.

1.

2. *Bulbar Lesions*.—Case I. A 70 year old woman with aortic aneurism had an apoplectic attack without loss of consciousness. The clinical symptoms were vomiting, difficulty in swallowing, pareses of the left arm and right leg, together with paresthesia in the affected extremities and in the area of the fifth nerve and upper left cervical nerves; left-sided facial palsy with vasomotor disturbances, areflexia of left cornea, disturbance of equilibrium with tendency to fall to left. The writer considers the lesion to be in the area supplied by the posterior inferior cerebellar artery.

Case II. A tabetic suddenly was seized with vertigo and vomiting without loss of consciousness, and at the same time disturbance of sensation over the entire right half of the body, difficulty in speech and diplopia. Examination two weeks later showed areflexia of left cornea, doubtful paresis of the left faucial pillar, analgesia of right side, also thermhypesthesia, ataxia of left extremity and cerebellar ataxic gait. The lesion was placed in the left tegmental half of the pons.

3. *Hereditary Degenerations*.—With the view of adding further evidence and corroborating the conclusions of recent articles by Jendrassik and himself, the writer presents the clinical history and pathological findings of several cases. In the first case five members of the same family were similarly affected. In this case the findings at the age of 15 were a combination of Friedreich's ataxia with muscular dystrophy. Pathological examination corroborated the clinical picture. The second case was a combination of Friedreich's ataxia and Huntington's chorea. In the third the author describes a family in which four members showed a symptom-complex which could not be placed under any of the usual types of hereditary degeneration. The special features were, microcephaly, limited intelligence, failure of the Achilles tendon reflexes, presence of Babinski, muscular weakness and muscular shortening. The author considers these cases as new evidence for the conception of Jendrassik, according to which the muscular dystrophies, the hereditary spastic paralysis, Friedreich's ataxia, Marie's cerebellar ataxia, etc., are not separate diseases, but transitional forms of hereditary degenerations and are not sharply defined from the other.

4. *Sequela of Carbonic Acid Poisoning*.—The writer reports clinically two cases of gas poisoning which produced nervous symptoms lasting in character. In the first case the symptoms were those of multiple sclerosis and hysteria; in the second case they resembled neurasthenia and Graves' disease.

5. *Syphilitic Spinal Paralysis*.—Clinically the case resembled a combination of beginning cervical tabes with spastic paralysis, pathologically it shows a combined systemic degeneration.

6. *Acute Ataxia*.—The clinical picture in the author's Case II did not correspond to any of the recognized forms of ataxia. From analogy to Korsakow's syndrome the author reasons that in his case the motor ataxia was due to a central cerebral disturbance, in which there was a disturbance of the central coordinating faculty.

7. *Myotonia and Myotrophy*.—Voss reports a case of acquired myotonia associated with progressive muscular atrophy of the Aran-Duchenne type. A partial congenital atrophy of the eleven, at the wrist muscles was also noted.



Hoffman and Peltz believe that muscular atrophy is associated with myotonia in 10 to 12 per cent. of all muscular atrophies. The writer does not agree with Peltz in the formation of a special type "Myotonia acquisita;" because myotonic symptoms are present in various diseases, such as syringomyelia, myelitis, tetany, etc.

S. LEOPOLD (Philadelphia).

### Miscellany

A CASE OF PROGRESSIVE JUVENILE DEMENTIA. (Clinically "Juvenile Paralysis.") G. Janssens and R. A. Mees. (*Journal für Psychologie und Neurologie*, Band XI. Heft 4 and 5.)

The patient was born in 1884 and died in May, 1906. The family history was negative. Patient was somewhat tardy in developing, he began to talk and walk at the age of two and remained distinctly backward in these functions. He attended school from his sixth to his thirteenth year, during which he was regularly promoted and his teachers had no complaint to make about him. He was especially known as a nice writer. He had not suffered from any special diseases and there was no history of convulsions. At the age of eleven his speech showed some disturbances which seemed to continue progressively, and at the same time he began to evince some difficulty in his walking. What was still more striking was the arrest of mental development which soon merged into a distinct retrogression of his psychic abilities. He became awkward and unable to learn a trade or continue with school work. In 1899, on admission to hospital, he made the impression of a helpless idiot. He showed marked disturbances in speech, coarse tremors of hands and fingers, so that he had difficulty in eating and was unable to write. His tongue, too, was tremulous. The eyes showed nothing abnormal. The reflexes were lively but there were no differences between the two sides. There was no clonus, no Babinski and no Romberg, but the gait was of the spastic-paretic type. This condition gradually progressed and comparatively soon after admission he was in a state of terminal dementia. He was unable to talk, he became very filthy, and toward the last few months he developed paralysis and contractures of the lower extremities. Four lumbar punctures were made at different times and only once, in April, 1904, did it show a positive reaction.

The probable clinical diagnosis was juvenile paralysis, as the only symptoms that were missing to make the picture complete were the eye syndrome and paretic convulsions. This diagnosis, however, was not borne out by the histopathologic findings. There was absolutely no meningitis, no increase of blood vessels, no proliferating manifestations of cells in vessel walls. Only the basilar artery and a small pial vessel showed any distinct proliferating manifestations of the intima. After a very careful examination not a single plasma cell could be found, nor was there any marked proliferation of glia, a thing always present in old paretic processes. The authors carefully discuss the literature that would have any bearing on the case and conclude that this case does not belong to any of the morbid pictures hitherto known, and hence name it "Progressive Juvenile Dementia."

A. A. BRILL (New York).

PSYCHOLOGICAL FACTORS IN DEMENTIA PRÆCOX: AN ANALYSIS. A. A. Brill (*Journal of Abnormal Psychology*, September-October, 1908).

In this extremely interesting article Brill analyzes a case of dementia præcox according to the methods of Freud and Jung. Fifty-six associations were employed and the repressed complexes which dominated "the ego complex and influenced all thoughts and actions" were brought to the surface. Thus the mental symptoms were no longer meaningless, but had a definite significance and related to undercurrents of the mental life of the patient. To quote the author: "Following the Zurich school an attempt has been made to analyze this case in accordance with Freud's methods. We have shown that just as in the normal dream the elements in the patient's crises seemed at first senseless, incomprehensible and disconnected, but were readily explained by psychoanalysis. Little attention was paid to diagnosis. It makes but little difference whether we call this case catatonic, paranoid, or hebephrenic, the problems remain the same. What interest us most are the psychogenic mechanism of the symptoms. To be sure it is not always possible to penetrate the mind of dementia præcox, and indeed I dare say that considerably more might have been elicited had we succeeded in obtaining the patient's collaborations, but enough has been unravelled to show at least some of the relations between cause and effect and the part played by the repressed complexes."

This article should be read in the original. It is the first of its kind in English and, indeed, Dr. Brill ought to be congratulated upon having made this excellent contribution to Anglo-Saxon psychiatry.

M. J. KARPAS (Vienna, Austria).

A REMARKABLE CASE OF CRANIAL HEMORRHAGE AND DISTURBANCES OF CALCULATION IN A LOCALIZED BRAIN AFFECTION. M. Lewandowsky and E. Stadelmann (*Journal für Psychologie und Neurologie*, Band XI., Heft 6).

A healthy young married clerk of 27 became sick without apparent cause. The disease began with headaches and visual disturbances and within eight days he was admitted to the hospital. He suffered from symptoms of severe cranial pressure. He was somnolent and frequently vomited. With the exception of a slight right facial paresis no facial signs could be found. There was no history of lues or alcoholism. Four days after admission a lumbar puncture was done. The fluid was clear, the pressure was 98 cm. and showed distinct respiratory and pulse fluctuations. On drawing 2 c.c. the pressure came down to 60 cm., and on drawing 3 c.c. more it came down to 33 cm. Pupils reacted promptly, but there were choked discs on both sides. His general condition deteriorated within the next six days so that it reached to complete torpor. A Neisser puncture was then made over the region of the left occipital lobe, and after the needle penetrated to a depth of  $3\frac{1}{2}$  cm. 60 c.c. of a chocolate brown fluid were removed which was found to be pure old blood. Following the puncture there was a distinct improvement, in two days the sensorium was clear and nine days after the puncture he requested his discharge. It was then ascertained that he had a right hemianopsia. Three weeks after puncture the patient left hospital still showing the hemianopsia. Six months later he was perfectly well.

The remarkable points in this case are: (1) The spontaneous appearance of a cranial hemorrhage in a healthy young man of 27, who suffered from no other disease and was never ill before. (2) The hemorrhage

was in the brain and not dural, as the blood was not reached before the needle penetrated  $3\frac{1}{2}$  cm. (3) The gradual development, there being no trace of a stroke or disturbance of consciousness, and (4) the diagnosis and cure by the Neisser brain puncture. It is the first case of its kind in the literature.

In testing patient's intelligence the authors found special disturbances in calculation which could be referred to neither the general disturbances of intelligence nor to any speech disturbance. It was characterized by a general retardation in finding the results, by frequent errors, and total inability to do simple sums. These mistakes were due to a lack of impressibility for figures, to a perseveration of some and escapement of others. There were certain analogies to the speech disturbances especially as seen in Wernicke's aphasia, but there was no doubt that here they were independent of any speech disturbances. It was then questioned whether these arithmetical defects were not connected with the disturbance of optical reproduction of figures which was demonstrated in this patient, and this gives rise to the question whether the arithmetical disturbances were not due to the fact that the morbid process was localized in the left occipital lobe. The occipital lobe is the optic sphere, and that the left is more important than the right is shown from experiences with psychic blindness and allied states. The authors think that it may be possible by studying similar cases to find a lawful relation in the sense of localization of the optical components of calculation in the left occipital lobe. Besides this case authors examined four other cases where the disease processes were in the occipital lobes, two were in the right and two in the left lobes, the former showed no traces of disturbances of calculation while in the latter they were present.

A. A. BRILL (New York).

COMPARATIVE ANATOMIC INVESTIGATIONS OF THE POSTERIOR SPINAL ROOTS IN THE MAMMAL AND A FEW REMARKS ON THE TABETIC POSTERIOR COLUMN DISEASE. Julius Bauer (Arbeiten a. d. Neurologischen Institut an der Wiener Universität, XVII. Bd., 1. H., 1908).

Bauer, following the work of Levi, investigated mainly the relation of the glia connective margin in the posterior roots in the mammalia. Levi found in men this margin to be intramedullary in the cervical region, at the periphery in the dorsal, and extramedullary in the lumbar and sacral regions in a cross-section of the spinal cord. To the peculiar position of the glia in the last Levi ascribes the predisposition of the lumbar region to tabes. Bauer found that the glia connective tissue zone in the mammal is also extra-spinal in the cervical region, and a similar position of the glia was demonstrated in cervical tabes. Bauer agrees with Levi that this peculiar relation of the glia connective zone in the lumbar and sacral area is an important predisposing factor in the production of tabes.

M. J. KARPAS (Vienna, Austria).

THE STRUCTURE OF THE MIDDLE ZONE IN THE SPINAL CORD. Z. Reich (Arbeiten aus dem Neurologischen Institute an der Wiener Universität, Bd. XVII., Heft II., 1909).

Reich made a careful study of the comparative anatomy of the middle zone of the spinal cord with special reference to the middle cells. The author rejects Waldeyer's view regarding the grouping of cells in the middle zone, and proposes to name all the cells in the middle zone, with

the exception of the Clark's cells and those in the lateral tracts, as *middle* cells, because they cannot be differentiated from each other either morphologically or anatomically. The cells are usually polygonal in shape in the higher scale of the mammal, and oval in form in the lower mammal. In all animals the position of the cells is in the commissural region of the cervical, lumbar and sacral areas, and in the dorsal where the Clark's cells are developed. In those parts of the cord where the Clark's cells are fully developed the position of the middle cells is always ventro-lateral to Clark's cells and at times some are in the columns proper. The number of the middle cells is greatest in the cervical and lumbar enlargement. In the dorsal region of the spinal cord in men and animals, where Clark's cells are present, the middle cells diminish in number with the increase of Clark's column. The author believes that the increase of the Clark's cells with a corresponding diminution of the middle cells, or vice versa, offers a hypothetical explanation of the existence of a physiological connection in the sense of a reciprocal functional substitution between these two kinds of cells (middle cells and Clark's cells). Moreover, his views are ratified by the following anatomical facts: (1) In those regions in which Clark's columns are interrupted in their course the middle cells appear on the increase at the corresponding level. (2) Quite often the Clark's cells enter the middle cells and vice versa. (3) Morphological transformation exists between these two kinds of cells. (4) The middle cells like the Clark's cells appear to receive fibers from the posterior roots and most probably form the direct cerebellar tract ventral (Gowers'), and also the direct cerebral tract dorsal where the Clark's columns are not present (in the sacral region in men and in the whole cord of the lower mammal). The author is of the opinion that a physiological reciprocity exists between these two tracts (direct cerebellar ventral and direct cerebellar dorsal).

M. J. KARPAS (Vienna, Austria).

APROPOS OF THE BUNDLE OF FIBERS IN THE TEGMENTUM AND ITS PROBABLE RELATION TO THE ACT OF MASTICATION. Julius Bauer (*Anatomischer Anzeiger*, XXXIII. Bd., 1908).

Bauer describes a bundle of fibers which in sagittal and basal sections in various animals could be easily traced through the mid-brain. They run laterally and originate probably from the caudal segment of substantia nigra and enter toward the midline of velum medulare anterior. In those animals in which this bundle of fibers (it was named by the author as *fasciculus circumflexus lemnisci lateralis*) is not well defined, however, there are numerous fibers which run between the upper fillet nucleus and substantia nigra. The author believes that possibly both these bundles of fibers unite the substantia nigra with the motor nuclei of mastication.

M. J. KARPAS (Vienna, Austria).

THE PRESENT STATUS OF PSYCHOTHERAPY. A. Forel (*Journal für Psychologie und Neurologie*, Band XI., Heft 6).

The author starts by defining psychotherapy as "the sum total of those remedial agents which make direct use of the natural nerve-waves or the activities of the neurones called by me 'neurokym,' for the purpose of obtaining curative effects. The concept of neurokym is used in the broadest sense of the word, namely, in the sense of each and every nerve activity from peripheral sensory organs to the brain. It includes the activ-

ities of nerve fibers and fibrils, the ganglia cells within and without the brain, as well as the wave stimuli imparted by them to the muscles, and their reaction on the lower ganglia cells such as the sympathetic system. By psychotherapy I understand not only the employment of the super-conscious processes, but also the subconscious nerve activities. In fact the expression neurotherapy or neurokymic therapy would really be more adequate as the usage of language reserves the word 'psychic' for those nerve activities which manifest themselves introspectively in our super-conscious memory and remain in that realm."

Psychotherapy is on the one hand broader and on the other hand narrower than the general practitioner imagines. It is narrower because it has no power over destructive organic brain lesions and physical ailments of bacterial or outer toxic origin. But it is broader, in the sense that it embraces all diseases and symptoms due to a disturbance of pure nerve activity. Nothing is done by the medical schools towards the advancement of psychotherapy so that its practice has been taken up by charlatans, magnetic curers, New York Institute of Science, Lourdes miracle cures, etc. The author then briefly outlines some of the present schools of psychotherapy. "On the basis of an obscure psychology both Lévy of Paris and Dubois of Bern constructed a persuasion or will therapy in which the old fatal error of the psychophysical dualism in the human brain is again allowed to play along more or less unconsciously. This they put up against hypnotism. They do not understand that the will, the conviction, and in fact all psychic qualities of the individual, be it consciously or unconsciously, follow the same laws of nerve activity. They do not understand the whole question and see but one side of it, the introspective." On the other hand the psychoanalytic method of Breur and Freud is very important, but Freud, too, is one-sided because he relinquished suggestion and hypnotism. Suggestive therapy which is the only indicatio morbi in cases of enuresis, habitual obstipation, dysmenorrhea, insomnia, cephalalgia, etc., is not employed because the doctors are ignorant of its use. The author thinks that it is about time that something should be done and proposes an international congress of medically educated psychotherapists.

A. A. BRILL (New York)

APROPOS OF GENUINE AND SYMPTOMATIC MIGRAINE. Schüller (Wiener Medizinischer Wochenschrift, No. 17, 1909).

Schüller after delineating the symptom-complex of migraine and briefly alluding to Spitzer's theory of migraine—stating that it is due to leptomeningitis in the region of foramen Monroe with subsequent relative stenosis of the same—subdivides symptomatic migraine into five groups: (I) The migraine symptom-complex occurring in luetic infection and in the prodromal periods of tabes and paresis. (II) In tumors of the brain, especially in the region of the posterior cranial fossa, fourth ventricle, and hypophysis. It is interesting to note that in cerebral growths migraine may be the first symptom. (III) Affection of the meninges (luetic and epidemic). (IV) Diffuse hyperostosis of the cranium. (V) Craniostenosis due to disturbance of growth; usually at birth synostosis of sutures is evident. Such cranial anomalies are known as "Turmschädel" (Tower-cranium). The author emphasizes the fact that in genuine migraine a disproportion between cranial capacity and size of the brain exists. Autopsies and x-ray examinations are confirmatory evidence. His conclusions may be summed up as follows:

(1) To the present well known types of symptomatic migraine we may add a new type of migraine in "Thurmschädel" (Towercranium) and in other forms of craniostenosis. (2) In a great number of forms of migraine the cause is due to continuous disproportion between cranium capacity and the contents of the cranium. (3) Such a disproportion is the anatomic foundation in genuine migraine and indeed an abnormal size of the brain is the fault of this disproportion. (4) X-ray examination in cases of genuine and symptomatic migraine is of great diagnostic importance. By this method we are enabled to ascertain the various pathological conditions of the cranium. Schüller's interesting article is worthy of careful perusal and thoughtful consideration.

M. J. KARPAS (Vienna, Austria).

THE SUBSTANTIA NIGRA SOEMERINGI. Julius Bauer (Arbeiten aus dem Neurologische Institute an der Wiener Universitet, XVII. Bd., Heft III., 1909).

Bauer in his interesting monograph discusses first the literature of this subject; secondly, he gives a detailed description of the anatomy of substantia nigra of forty-seven animals, including the elephant; thirdly, he refers to the pigment of substantia nigra. His thesis is that substantia nigra exists where pes pedunculi are present, this being true of all mammals. The cells of substantia nigra and those of substantia reticularis are difficult and almost impossible to differentiate anatomically in the lower mammal. Phylogenetically the cells of substantia nigra develop from the cells of substantia reticularis as soon as the radiations of the forebrain make their appearance on the ventral surface of the mid-brain, and with the development of cortical control over almost all nervous functions. Through substantia nigra impulses are conveyed from the higher centers to the tegment. In the lower vertebrates radiations also exist from the forebrain to the caudal part of the central nervous system, but these radiations lie in the mid part of the tegment. Here also the cells are thickly accumulated around these radiations, and form the so-called nucleus *entopeduncularis* which Bauer found a homologue in the substantia nigra in the mammal. The dark pigment of the cells in substantia nigra is melanin. It is to be remembered that melanin is the result of a specific oxydative ferment action on certain cyclic splitting products of albumin. Likewise, in the central nervous system in the human body—in substantia nigra, locus cœruleus, dorsal nucleus of vagus, and spinal ganglia—such an oxydative ferment and similar aromatic substances should be found at a certain age.

M. J. KARPAS (Vienna, Austria).

## Book Reviews

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DISEASES OF THE NERVOUS SYSTEM. For the general practitioner and student. By Alfred Gordon, A.M., M.D. (Paris) Associate in Nervous and Mental Diseases, Jefferson Medical College; Neurologist to Mt. Sinai Hospital, to Northwestern General Hospital, and to the Douglass Memorial Hospital. With 136 illustrations. Philadelphia, P. Blakiston's Son & Co.

The author lays stress upon the fact that this book is intended for the general practitioner and the student. It contains 27 chapters, 487 pages, with 136 illustrations. Beginning with a rather brief description of the anatomy and physiology of the nervous system and the methods of examination the author then treats the organic, the functional nervous diseases, the diseases of the sympathetic system, as well as the nervous symptoms produced by intoxications. The descriptions are often short, of the definition type, but the very nice plates and illustrations are worthy of imitation by the more voluminous text books. The book covers rather superficially the subject of nervous diseases but serves the purpose for which it was intended.

A. A. BRILL (New York).

HYPNOTISM AND SUGGESTION IN THERAPEUTICS, EDUCATION AND REFORM. By R. Osgood Mason, A.M., M.D. Pp. viii + 336. Published by Henry Holt and Company, New York.

The author has put forth this work with the feeling, as expressed in his preface, that "hypnotism to the medical profession has not been a specially welcome guest, either in England or America," and in the belief that the time is ripe for its wider exploitation. The book is written in a popular style, although from the preface one would suppose it to have been written rather with the idea of making a more exclusive appeal. The style is clear and facile, many cases are cited by way of illustration, including almost all those well known in literature. While the cases are described in a clear and interesting way, their treatment is after the purely anecdotal manner, so that their evidential value is very small. For example, on page 81 the following is given as the description of an experiment: "I went one day with the operator to Exeter to visit Commodore Lang who wanted to see Ira when mesmerized. Among many other things the Commodore had a big Chinese book full of pictures. This was given to Ira. He took it on his lap, closed, did not open it, but commenced to look through, admire, and describe the pictures. We opened the book many times and found he had described them very accurately." It is needless to comment on this kind of evidence. It is of exactly the same variety as that used in the middle ages to prove the personal appearance of his satanic majesty on earth. In the same way the shibboleth suggestion is called upon to explain phenomena as if suggestion itself were something quite settled and well understood.

The work is entertaining and readable. All right for the initiated, but offers nothing new, and in its apparent simplicity misleading to those into whose hands it is most apt to fall.

WHITE.

LES NÉVROSES. By Dr. Pierre Janet. Ernest Flammarion, Ed., 1909. Pp. 397.

This work is really a condensation of the author's previous publications, with some slight changes in certain details made necessary by time. The first part consists of a description of the general neuropathic symptoms and a second part contains a résumé of the symptomatology of hysteria and psychasthenia with a consideration of the theories to account for these psychoneuroses. The final chapter is an attempt to answer the question—What is a neurosis? Perhaps the best way to get an idea of this work will be to quote the definitions which the author reaches after these discussions: Hysteria becomes then a form of mental depression characterized by the retraction of the field of personal consciousness and by the tendency to the dissociation and the emancipation of systems of ideas and of functions which by their synthesis constitute the personality.

Psychasthenia is a form of mental depression characterized by the lowering of the psychological tension, by the diminution of the functions which permit reaction to reality and the perception of the real, by the substitution of inferior and exaggerated operations under the form of doubts, agitations, anguish, and by obsessing ideas which express preceding troubles and which present, themselves, the same characters. Neuroses are disorders affecting the divers functions of the organism, characterized by an alteration of the superior parts of these functions, arrested in their evolution, in their adaption to the present moment, to the present state of the external world and of the individual, and by the absence of deterioration of the older parts of these same functions which could still very well exercise themselves in an abstract manner, independent of present circumstances. In short, the neuroses are disorders of the divers functions of the organism, characterized by the arrest of the development without deterioration of the function itself.

WHITE.

JAHRBUCH FÜR PSYCHOANALYTISCHE UND PSYCHOPATHOLOGISCHE FORSCHUNGEN. Edited by Bleuler, Freud and Jung. Deuticke, Leipzig and Wien., 1909.

At the first congress of those interested in Freud's psychology, held at Salzburg in April, 1908, at which the reviewer was present, it was realized that psychoanalysis not only requires experience, time and patience, but also space. The average description of a case of hysteria (zwangsneurose) analyzed by Freud's psychoanalytic method may fill hundreds of pages, and to condense such a case for publication is at times hardly possible and often causes misunderstanding and confusion. It was therefore decided to publish a yearbook containing interesting works which by virtue of their subject matter and magnitude are unsuitable for the ordinary medical journals.

The first volume of the yearbook for psycho-analytic and psychopathologic investigations contains 318 pages. Freud describes "An Analysis of a Phobia in a Boy Five Years Old." It is a profound study of



child-psychology and fully corroborates the "Three Contributions to the Sexual Theory." Abram—"The Position of Consanguineous Marriages in the Psychology of the Neuroses"—shows why there are so many consanguineous marriages among neuropathic individuals. Maeder—"Sexuality and Epilepsy"—treats comprehensively the different forms of the sexual abnormalities which he observed in 220 cases of epilepsy, and concludes as follows: "The sexuality of the epileptic is characterized by auto- and allerotic manifestations. It retains much of the infantile form, but assumes a certain development which I designate by the expression 'sexual polyvalence.' For reasons still unknown the libido attains a special intensity." Jung, in his characteristic lucid way discusses "The Significance of the Father for the Fate of the Individual." He gives a number of interesting cases and concludes that in his experience "it is usually the father who is the authorative and dangerous object for the child's fancy." It is interesting to note that Prof. O. Binswanger recognizes the value of Freud's psychoanalysis. The "Analysis of a Case of Hysteria" reported in this book by Dr. Ludwig Binswanger, his nephew, was analyzed by the latter at the Jena clinic of psychiatry at the request of Prof. Binswanger. This interesting analysis fills 144 pages of the book and is to be continued in Vol. II.

It is hardly possible to do justice to this excellent book in a brief review. Each of the subjects mentioned presents a new phase in psychology and sexology hitherto unthought of.

A. A. BRILL.

SELF HELP FOR NERVOUS WOMEN. By John K. Mitchell, M.D. J. B. Lippincott Company, Philadelphia, 1909.

Written for the patient herself; a guide to her feet and stimulus to her will. That to a nerveless critic the work seems well done, is beside the point; the important truth is that "it works" with the nervous woman herself. Loaned to one patient, it was returned with this warm commendation: "Wise, kind, tactful and helpful; it recalled to me the counsels of my vigorous, now departed grandmother."

This little book presents much sane thought expressed in sprightly, often epigrammatic style; a little paternal, yet not patronizing. It points out to nervous women the danger of weak surrender, of encouraging bad habits, of "feeling about feelings and thinking about thinking," of laziness and untruthfulness—and finally, the perils of drugs and clergymen wrongly used.

ANDREW H. WOODS.

SAMMLUNG KLEINER SCHRIFTEN ZUR NEUROSENLEHRE. II Folge S. Freud. F. Deuticke, Leipzig and Wien, 1909.

As a sequence to the collection of small articles on the neuroses published by the author in different journals between 1893-1906, and edited in book form in 1906, Freud now gives us another book containing a collection of small articles which he has published since then. Of the ten articles contained in the book we may mention The Fragment of a Hysteria Analysis, Compulsive Actions and Religious Exercises, Character and Analerotic, Hysterical Fancies and their Relations to Bisexuality, Generalities Concerning the Hysterical Attack, and Concerning Infantile Sexual Theories. The first article mentioned was published in 1905 and has excited a great deal of criticism. The author showed that all the symptoms

were psychogenetically determined and were based on actual experiences of the patient. It was the first case published by the author in which he showed the part played in analysis by symbolic actions, reveries and dreams. In *Generalities Concerning Hysterical Attacks*, Freud shows the resemblances between the hysterical attacks and the normal dream. The mechanisms of transformation, condensation, and the reversal of time relationship, play a great rôle in both, and hence the dream and the hysterical attack are unintelligible until explained by analysis. The *Hysterical Fancies and their Relations to Bi-sexuality, and Concerning Infantile Sexualities* have been fully reviewed by the reviewer in this Journal. The book is a mine of knowledge for those who are at home in Freud's psychology. Only those who have mastered Freud's methods and have had actual experience in analyzing themselves and others will appreciate the value of this book.

A. A. BRILL (New York).

*DIE SPRACHE DES KINDES UND IHRE STÖRUNGEN.* Von Dr. Paul Maas, Spezialarzt für Ohren, Nasen, Halsleiden und Sprachstörungen in Aachen. Würzburg, Curt Kabitzsch (A Stuber's Verlag), 1909. 2.80 Marks.

This is a short practical monograph of 122 pages, divided into seven chapters, with the following headings: The Development of Speech in the Child, the Anatomy and Physiology of the Organs of Speech, Stuttering, Stammering and Hesitation, Deaf Mutism, Word Deafness, Speech Disturbances in Children.

This field of medical science has had a comparatively late development, and there are but few medical schools where any systematic attention is paid to these disorders. The work by Gutzmann, at the Berlin University, is well known, and, in this country, the work done in Philadelphia has been most widely recognized. Chapters in text books on laryngology are unsatisfactory, and the author has sought to present to literature a careful study of some of the phases of disturbances of speech in the child.

This he has done with discrimination, and although the work is small, its merits far excel its bulk.

JELLIFFE.

## Notes and News

*American Association of Clinical Research.*—There is a movement on foot to establish an American Association of Clinical Research, for the purpose, first, of ascertaining the present exact status of clinical medicine and surgery, and, secondly, of advancing clinical medicine and surgery, by the conjoined clinical method or any other method that will ensure exact and abiding results. A meeting of physicians and surgeons interested in this subject is called for Wednesday, October 27, 1909, at John Ware Hall, Boston Medical Library, No. 8 Fenway, Boston, Mass.

The chairman of the committee of the association is Dr. James Krauss, 419 Boylston St., Boston, to whom all communications should be addressed.

# The Journal OF Nervous and Mental Disease

## Original Articles

### A CASE OF JUVENILE GENERAL PARALYSIS<sup>1</sup>

By WM. H. HOUGH, M.D.,

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WASHINGTON, D. C.

Although the literature of the subject of juvenile general paralysis has been considerably augmented during the past twelve or fourteen years, especially by the works of Alzheimer,<sup>2</sup> Hirschl,<sup>3</sup> Thiry,<sup>4</sup> Mott,<sup>5</sup> Idzac,<sup>6</sup> Palancar<sup>7</sup> and Klieneberger,<sup>8</sup> there is but little doubt that a great many cases of the disease remain undiagnosed, or else classed as one of the several more or less common dementing states of children. On the contrary, as shown particularly by the researches of Janssens and Mees,<sup>9</sup> and

<sup>1</sup> Reported before the Society for Nervous and Mental Diseases, of Washington, D. C., May 27, 1909.

<sup>2</sup> Alzheimer, A. "Die Frühform der progressiven Paralyse," *Zeitsch. f. Psychiatrie*, 1895.

<sup>3</sup> Hirschl, J. A. "Die juvenile Form der progressiven Paralyse," *Wiener Klinisch. Wochens.*, 1901.

<sup>4</sup> Thiry, C. "De la paralysie générale progressive dans le jeune âge," *Dissert. de la Faculté de Médecine de Nancy*, 1897, 1898.

<sup>5</sup> Mott, F. W. "Notes on Twenty-two Cases of Juvenile General Paralysis, with Sixteen Post-mortem Examinations," *Archive of Neurology*, 1899.

<sup>6</sup> Idzac, L. "Le diagnostic clinique de la paralysie générale juvenile," *Faculté de Médecine et de Pharmacie de Toulouse*, Vol. I, 1905.

<sup>7</sup> Palancar, J. "Peculiaridades de la Demencia Paralitica en los juvenes," *Revista Medica*, 1907.

<sup>8</sup> Klieneberger, Otto L. "Über die juvenile Paralyse," *Allgemeine Zeitschrift für Psychiatrie*, Vol. LXV, 1908.

<sup>9</sup> Janssens, G. and Mees, R. H. "Ein Fall von progressiver juvenilen Demenz (Klinisch. juvenile Paralyse)," *J. für Psychologie und Neurologie*, Band XI, Heft 4 u 5.

Ranke,<sup>10</sup> some cases presenting the clinical picture of the disease, fail to show the characteristic pathological changes.

Therefore, in order to aid, if possible, in the isolation of the true cases of this rather rare affection, from among those presenting a similar clinical picture, I report here a case typical both from the clinical and pathological viewpoints. This case is also of interest in showing histologically, evidence of congenital defect of the central nervous system which has recently been considered of importance. It is probable that at the present time there are less than two hundred cases of the disease reported in the literature. Ranke collected last year about all the cases reported up to that time, one hundred seventy-nine in all. This number has been increased to one hundred eighty-seven, by the addition of seven cases by Kleineberger and one case by Fairbanks.<sup>11</sup>

In order to properly diagnose and prognose the disease, an early and careful observation of the cases is of the utmost importance, and naturally this task not infrequently falls upon the general practitioner. The probability of the existence of the affection should be considered in all individuals between the ages of ten and eighteen years, in which there is evidence of progressive mental enfeeblement. The diagnosis as a rule is not difficult, but as in the adult form of the disease atypical cases are occasionally met with. In arriving at a diagnosis the physical symptoms are of quite as much importance as the mental, the former being quite like those of the adult form, the latter differing somewhat in that the dementia is generally a simple progressive dementia, seldom complicated by delusions or hallucinations. A history of syphilis, almost always congenital, is obtained in a large majority of the cases.

The case of Janssens and Mees presented clinically the picture of juvenile general paralysis, but failing to show, after an exhaustive study of numerous areas of the brain, the changes characteristic of paresis, they termed it one of progressive juvenile dementia. Homen<sup>12</sup> has described cases somewhat similar clin-

<sup>10</sup> Ranke. "Spielt in der Etiologie der Paralyse neben der luetischen Infektion eine spezifische Disposition des Nervensystems eine Rolle?" *Reference. Neurolog. Zentralblatt, Jahrgang 27, Nr. 11.*

<sup>11</sup> Fairbanks, A. W. "General Paresis in Children," *J. of the Amer. Med. Asso., Vol. LI, 1908.*

<sup>12</sup> Homen, E. A. "Eine eigenthumliche bei drei Geschwistern auftretende typische Krankheit unter der form einer progressiven Dementia in Verbindung mit ausgedehnten Gefässveränderungen (wohl Lues hereditaria tarda)," *Archiv f. Psychiat. Berl., 1892.*

ically, as Lues Hereditaria Tarda. The disease is to be differentiated also from sclerosis en plaque, precocious dementia, amaurotic family idiocy, cerebral syphilis and the so-called advancing imbecility and acquired idiocy.

My purpose is not to discuss here the subject in detail, but simply to report a case which recently came under my observation.

Any one especially interested in the subject will find the recent article by Klieneberger most instructive.

CASE.—R. W., No. 17,079. Colored female, age seventeen years. Admitted to the Government Hospital for the Insane, March 23, 1908.

*Family History.*—Father living; age thirty-eight years; has the general appearance of a man of a low order of intelligence; occupation, stableman. Has always enjoyed good health, except for about three weeks several years ago, when he was confined to bed suffering from fracture of the frontal bone just above the eye on the left side, the result of being kicked by a horse. This injury left him with external strabismus on the same side. He uses alcoholic drinks moderately. Had gonorrhea "several times." Separated from his wife about one and one-half years ago. Mother living; age thirty-seven years. Uses alcoholic drinks to excess, frequently becoming "dead drunk." Was married nineteen years ago. Has been living a life of prostitution for several years past. Has had twelve pregnancies, five terminated in miscarriages, four children died in infancy, two of them in convulsions, and three are now living. She is a healthy looking woman. Says she does not know of any diseases that she has had, except measles and "chicken-pox." Examination of her throat revealed an old punched-out ulcer on the right tonsil, and slight chronic inflammation of the pharynx. A number of post-cervical lymphatic glands are palpable. She says she has suffered with headache and neuralgia for the past year or more. The patient has two brothers living—Solomon, age fifteen, and Edward, age ten. Solomon is a healthy looking boy. Bridge of nose is depressed, nasal bones separated. Teeth are of the typical Hutchinson's type. There is general glandular enlargement. The epitrochlears, post-auriculars, cervical, axillary and inguinal glands can be easily palpated. The deep reflexes are markedly exaggerated. He has had "blind staggers" for three years past. The attacks have been as frequent as six per week; would lose consciousness and fall backwards. Suffered a great deal with headache, especially when exerting himself. Edward is a delicate looking child. He also has Hutchinson's teeth, saddle nose and general glandular enlargement. His tendon reflexes are active. He suffered for several years with "sore eyes," and about one year ago had infected glands of the neck.

*Previous History.*—The patient is the second child. At the age of one month she had a severe attack of scarlet fever complicated with nephritis. She was never fully developed mentally nor physically. Went to school for about three years but never passed the first grade. At the age of fifteen years she began to fail mentally and physically—became emaciated, untidy, more childish, irritable and fretful, and finally three months before admission, unable to speak and to walk. Never menstruated.

*Present Condition.*—The patient has the appearance of a child of about ten or eleven years of age. Her features are quite small. Skull proportionately large, forehead and parietal bosses being rather prominent. Ears, symmetrical. Eyes, large and prominent. Nose, broad, bridge depressed, nasal bones separated, the perpendicular plate of the ethmoid being easily palpated. Teeth are small and of the typical Hutchinson's type. Palate is symmetrical and high arched. Facial expression idiotic. The patient being weak and unable to stand is confined to bed. She lies on her back with her legs flexed, grinding her teeth or sucking her right thumb the greater part of the time. When approached she will invariably clap her hands and cry. She does not obey commands, and when touched will draw away and appears to be frightened. She does not talk, but her grunts and cries show considerable tremor.

*General Physical Condition on Admission.*—Patient is considerably emaciated. Skin is hard and scaly over the extremities, smooth on the body. Small, partly healed sore over the right buttock. No glandular enlargement apparent. Pubic and axillary hairs scanty. Chest, small. Ribs and clavicles prominent. Palpation, percussion and auscultation normal, except slight harsh breathing just below the apex of the left lung. Tuberculin reaction negative. Superficial arteries normal to the feel. Heart in normal position. Area of dulness very small. Apex beat perceptible. Auscultation shows no abnormality. Pulse ranges from 100 to 112. Blood pressure 115. Teeth and palate as above noted. Tongue coated. Breath offensive. Abdominal viscera appear to be normal in size and position. General appearance of external genitalia, infantile. Urinary examination shows a number of hyaline casts, a few leucocytes and cylindroids, otherwise normal. Eyes, no strabismus; pupils equal, medium size; reaction to light scarcely perceptible. Unable to examine fundus. There is a marked exaggeration of all the deep reflexes, the patellar being the most active. There is well marked ankle clonus, slight wrist clonus, suspicion of Babinski reflex on the right side, no paradoxical reflex. The vesicle and rectal reflexes are absent. The sensibility to touch is greatly increased and there is disproportion between very light and heavy touches, the former being decidedly more pronounced. There is dissociation between the sensations of heat and cold. The mildest degree of cold pro-

duces prompt reaction, whereas, all degrees of heat, except those hot enough to char the tissue, produce no response. There is reaction to strong electric currents, both galvanic and faradic, when care is taken to apply electrodes over motor points. No reaction to weak currents. No reaction of degeneration. There is slight contracture of the hamstring muscles, most marked on the right side. Marked incoördination of the hands and arms and fine fibrillary tremor of the lips and tongue. Coarse tremor of the fingers.

*Special Senses.*—The patient's ability to smell is much impaired, but touch sensations in the nose remain. Pays no attention to the odor of camphor or valerian, but responds promptly to ammonia. The patient can see, but psychical vision is probably impaired. When a pencil, a piece of gauze or a test-tube is held before her she puts out her tongue to taste. If the articles are placed in her hand she puts them in her mouth. Taste is impaired—appears to relish equally well a piece of orange, a piece of orange saturated with quinin, and a piece of gauze saturated with nux vomica or valerian. Hearing is also much impaired; no reaction from the sounds of a tone tester, or the high notes of the Galton whistle. When spoken to loudly there is a slight response, probably due to jars, rather than to the sound produced.

*Mental Examination.*—So far as can be determined the patient has no appreciation of time, place or person. No discoverable delusions or hallucinations. It is apparent that there is a profound degree of dementia. There is no history of delusions or hallucinations having existed before the patient was admitted to this hospital. The history indicates that the patient was never up to the normal mental standard, and that at the age of fifteen she began to gradually deteriorate mentally.

*Examination of the Cerebro-spinal Fluid.*—March 26, 1908. Fluid perfectly clear. Twenty-five cells per c.mm. As the Fuch and Rosenthal method was used no accurate differential estimation could be made. The cells appeared to be mostly lymphocytes, with an occasional polymorphonuclear leukocyte and a few degenerated cells. The protein content was in the proportion of one-half gram per 1,000 c.c. April 12, 1908.—Fluid perfectly clear. Fifty-four cells per c.mm. The proportion of the polymorphonuclears appeared to be somewhat smaller than the former examination. Protein content, approximately the same.

*Progress.*—The general condition of the patient remained practically unchanged until April 4. On March 31 she was put on  $\text{HgCl}_2$  1/16 grain, hypodermically; and K1 by mouth. This was continued with occasional intermissions until April 14, when it was stopped on account of the following changes in the patient:

On April 4 there appeared marked external strabismus of the left eye and she appeared somewhat more nervous and restless

than usual. She persistently removed the pillow from under her head, but there was no perceptible retraction of the neck. On April 7 there appeared evidence of salivation, and by this time the strabismus became more marked and involved the right eye as well as the left. On April 15, she had a mild convulsion with loss of consciousness, the most marked clonicity being on the left side of the face. She remained quite stupid for about one-half a day. For three days after the attack the mouth was drawn to the right with obliteration of the naso-labial fold on the left. It was difficult to get the patient to take nourishment, apparently due to difficulty in swallowing, and she became inclined to sleep a great deal during the day. By May 5, the strabismus had disappeared and there was scarcely perceptible drawing of the mouth. On June 1 bed-sores began to develop over both trochanters and sacrum. From this time until her death, June 22, she became more and more emaciated, difficult to nourish, the bed-sores continued to develop, and the temperature ranged from 100 to 102 degrees.

*Autopsy—Shortly After Death.*—General appearance: The body is that of an emaciated female, having the appearance of being about twelve years of age. There are marked contractures at both knees, and extensive bed-sores of the trochanters and sacrum. (For details, see clinical records.)

Lungs: No pleuritic adhesions; rt., wt. 210 grams; lt., wt. 90 grams; slight degree of edema. Heart—wt. 90 grams; valves normal; absence of epicardial fat. Liver—wt. 610 grams; surface smooth; no scars; tissue, bile-stained. Gall bladder normal, contains 20 c.c. of thick ropy bile. Kidneys—rt., wt. 75 grams; lt., wt. 95 grams; capsule non-adherent; surface smooth; cortex appears somewhat swollen. Spleen—wt. 25 grams; capsule thick; pulp fibrous and tough. Stomach—some ecchymosis, otherwise normal. Intestines—normal. Pancreas—wt. 40 grams; apparently normal. Uterus—small; cervix slightly larger than the body. Ovaries—small, apparently normal. Thyroid gland—apparently normal. Three apparently normal parathyroids.

Skull and Meninges: Skull, symmetrical and of the usual thickness. There is some imperfection of the sagittal suture. Dura non-adherent to the skull. Fenestration of the falx anteriorly. Pia-arachnoid thickened and opaque, most marked over the anterior two-thirds of the vertex. White lines along the veins. No decortication on removal of the membrane.

Brain: Wt. 663 grams. Left hemisphere, 272 grams; right hemisphere, 267 grams; cerebellum and brain stem, 124 grams. 155 c.c. of clear cerebro-spinal fluid were collected on the removal of the brain and draining of the ventricles. The brain is unusually firm to the feel; the convolutions are small and widely separated, most marked anteriorly, and in the region of the base of the left Sylvian fissure. The cerebellum is small and indurated



and its convolutions are thin and wire-like. The pons is unusually small, particularly anteriorly. Cerebellar peduncles quite small. The basal furrow is deep and wide. The medulla is firm to the feel. The olfactory bulbs are yellowish in color. The optic nerves are small but appear normal. The lateral ventricles are markedly dilated, and there is slight ependymitis in the recesses of the floor of the fourth ventricle. The callosum is quite thin. The arteries appear normal, except there is no posterior inferior cerebellar artery on the left side, its place being taken by a branch from the anterior, which is quite large. The gross appearance of the cord shows no abnormality. Sections of both sciatic nerves, brachial plexus and pneumogastric nerves were removed for microscopical examination.

**Microscopical Findings:** The various organs examined showed no decided variation from the normal, except the kidneys, in which there was a well marked degree of cloudy swelling. It should be noted, however, that especially in the pancreas, thyroid, parathyroid and several lymphatic glands, there was an unusually large number of mast cells. These cells were not so numerous in the adrenals, kidneys, ovaries, etc. The nerves, as stained by the method of Weigert-Pal and with hematoxylin-eosin, showed no change from the normal.

There is a mild but diffuse infiltration of the pia-arachnoid in all pieces examined, both in the cerebrum and cerebellum.

It is important from a diagnostic standpoint to note the fact that there is no special condensation of the process that could be taken as a purely tertiary syphilitic lesion. The infiltration consists most prominently of plasma cells and lymphocytes with an occasional fatty granular cell, and a few mastzellen. Some of the plasma cells present evidence of degeneration, as shown by the presence of metachromatic inclusions, which have been described by Alzheimer,<sup>13</sup> Lhermitte<sup>14</sup> and others. I could hardly detect signs of growth of the superficial layers of neuroglia into the meninges as has been described in general paralysis (the neuroglia, however, in general being distinctly proliferated). This finding accounts for the lack of decortication on the removal of the meninges. The spinal pia shows to a somewhat less degree, an infiltration qualitatively the same as in the brain.

**The Vessels:** As in the pia, the vessels, both in the cerebrum and the cerebellum, show infiltration with plasma cells and lymphocytes. Also the cord shows here and there a slight plasma cell exudate. In the cerebral cortex the mass of infiltrative cells surrounding the small vessels is most marked, so that the meninges and cortical vessels show a very similar condition. This

<sup>13</sup> Alzheimer, A. *Histologische Studien Zur Differential diagnose der progressiven Paralyse, Histologische und histopathologische Arbeiten*, Vol. I.

<sup>14</sup> Lhermitte. *Sur les cellules muriformes a la paralysie générale Encéphale*, Paris, 1909.

condition is not so pronounced in the cerebellum. Here the pia shows infiltration; and although numerous plasma cells are seen in almost all leaflets examined, we occasionally meet places in which the infiltration is quite scarce, and others in which the vessels have undergone a more degenerative than inflammatory process, as shown by the presence of masses of calcareous and hyaline material. This condition, though, is not purely a degenerative one, because here and there some plasma cells can be seen among the calcareous concentric bodies. This picture is a

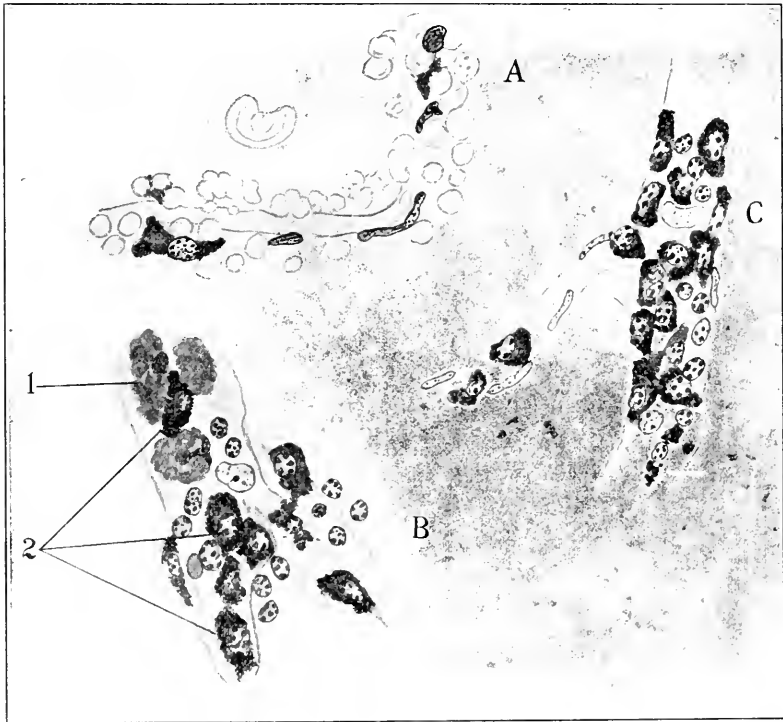


FIG. 1. Juvenile General Paralysis. *A*, calcareous material around a small vessel of the cerebellum; *B*, plasma cells and fat granule cells around vessel of the brain; *C*, plasma cell infiltration in the pia of the cerebellum. ( $\frac{1}{2}$  oil immersion, toluidine blue, ocular 6.)

rare one in general paresis and I have not found in the literature an account of a similar process in the juvenile form.

A number of chemical tests were made in order to determine the nature of these bodies, and I came to the conclusion that the deposited substance is hyaline, the greater part of which had undergone calcification. The fact of an extensive degeneration

and sclerosis of the vessel walls taking place in a subject seventeen years of age, is interesting, although we know, especially through the researches of Barhdt,<sup>15</sup> that arteriosclerosis in children is more frequent than it was formerly supposed to be. It is difficult to decide in this case what relation the above mentioned process bears to the condition of paresis, especially in view of the fact that there were other signs of congenital defect in the cerebellum which will be mentioned presently. The vessels, especially those of the meninges, as stained by the Weigert method, showed an increase of elastic fibers sufficiently marked to be considered pathological.

**Ganglion Cells:** The cytoarchitectonik of the cortex is impaired in many places and evidence of great destruction of the nerve elements is indicated by the marked proliferation of neuroglia. The single ganglion cell elements show the different acute and chronic sclerotic changes described by Nissl. Some cells also show a vacuolated condition. The vacuoles are filled with hyalin material, not staining with basic aniline dyes. Fatty degeneration of the ganglion cells is not pronounced. The scharlach red method shows evidence of fatty substance around the vessels and especially in the adventitial cells, but very few ganglion cells show red stain granules.

The changes seen in the Purkinje cells in the cerebellum are most interesting, especially on account of bearing evidence of a defective development of the central nervous system, in addition to the actual inflammatory process. In these ganglion cells of the cerebellum it is difficult to recognize any impairment secondary to the inflammatory condition seen in the vessels. The number of Purkinje cells is perhaps less than normal, but the cells present show a complete preservation of the normal structure. In fact, the Nissl bodies in size and disposition appear in the usual well known way. It is, however, apparent that many of these cells contain two distinct and well developed nuclei. The shape of the cell is, through the presence of the two nuclei, markedly different from the normal, but I wish to insist that the structure is absolutely complete. Similar changes to those present in this case have been described in cases of juvenile general paresis by Sträussler,<sup>16</sup> Trapet,<sup>17</sup> and Rondoni,<sup>18</sup> and in every case accepted as evidence of a defective development of the nervous system. It is well known, especially by the researches of Ranke, that hereditary syphilis is very apt to produce different conditions in the

<sup>15</sup> Barhdt. "Juvenile Arteriosklerosis," Berl. klin. Woch., Vol. XIV, 1908.

<sup>16</sup> Sträussler. "Die histopathologischen Veränderungen des Kleinhirns bei der progressiven Paralyse, mit Berücksichtigung des klinischen Verlaufes und der Differentialdiagnose," Jahrb. f. Psych., Bd. 27, 1906.

<sup>17</sup> Trapet, A. "Entwicklungsstörungen des Gehirns bei juveniler Paralyse," Archiv. für Psychiatrie und Nervenkrankheiten, Berl., 1909.

<sup>18</sup> Rondoni. Quoted by Trapet.

brain, attributed to defective development. It is to be remembered here also that Montet<sup>19</sup> has found in cases of sclerosis tuberosa the same condition we are dealing with in the cerebellum, namely, double nucleated Purkinje cells.

Neuroglia: It has been intimated above that there was a considerable proliferation of neuroglia parallel to the impairment of the nervous elements. In all sections examined this proliferation

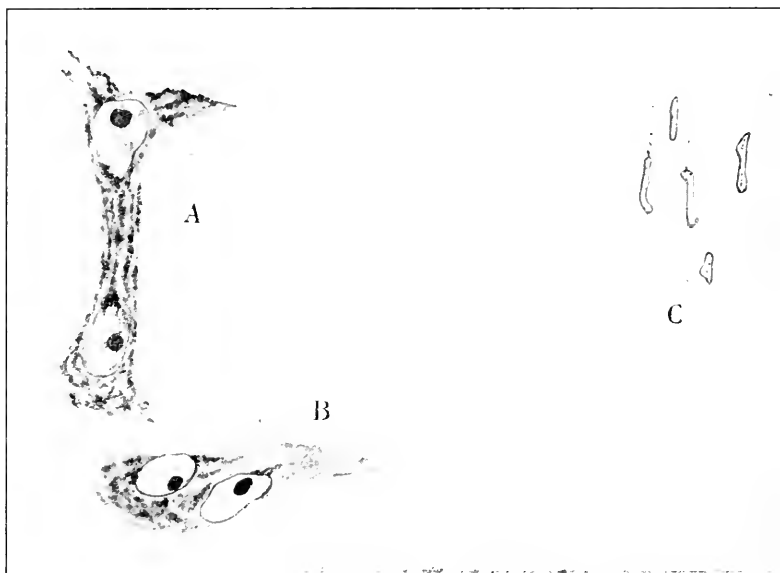


FIG. 2. Juvenile General Paresis. *A* and *B*, Purkinje's cells with two nuclei; *C*, Stabchenzellen (red cells) in molecular layer of the cerebellum. ( $\frac{1}{2}$  oil immersion, fohuidine blue, ocular 6.)

is apparent. In the cerebellum, in many of the leaflets, the parallel Bergman's fibers of neuroglia are markedly increased. Stabchenzellen: The nature of these elements, whether neuroglial or mesodermic, is a matter of much discussion. Many of these cells are present in the cerebellum, keeping a perpendicular position in relation to the surface of the leaflets, that means parallel to the Bergman's fibers. The researches of Straussler show that at least many of the cells are of neuroglial nature from the fact that they are able to form fibers. Although it is accepted that their presence has no pathognomic value for a diagnosis of paresis, all cases of paresis presented them, and I therefore wish to mention their abundance in this case.

The nerve fibers examined by the method of Wolter-Kul-

<sup>19</sup> Montet. "Recherches sur la sclérose tubéreuse," *Encéphale*, Paris, 1908.

schitky are very much diminished; not only the tangential fibers are very much impaired, but also the supraradial plexus. The nerve fibers as stained by the method of Bielschowsky showed evidence of destruction in the upper layers of the cortex. This method also showed many of the pyramidal cells to be impaired. In the cord there is a slight but well marked degeneration of the lateral pyramidal tracts.

In closing, I should state that we consider the case of interest not solely on account of its being a typical one both clinically and pathologically, but also because of the presence of the double nucleated Purkinje cells and the calcification of the cerebellar arteries in a girl seventeen year of age.<sup>20</sup>

<sup>20</sup> I desire to express my thanks to Dr. N. Achúcarro for his supervision of the histological work in this case; and to the Hospital Librarian, Miss Louise T. Sackmann, for collecting most of the literature on the subject and for translating many of the articles.

## HEREDITARY SPASTIC PARAPLEGIA. REPORT OF SEVEN CASES IN TWO FAMILIES<sup>1</sup>

By JOHN PUNTON, M.D.

Degenerative diseases of the cord have so often occupied the attention of this organization that one hesitates to consume the limited time at your disposal in their further consideration.

Previous studies, however, in this direction, have largely been confined to those affections in which heredity if at all a factor in their etiology and pathology was largely incidental, while their progressive tendencies were due to the intervention of some acquired morbid agent.

In contra-distinction, the cases now to be reported present heredity not only as the chief etiological factor, but also the primal evolutionary pathological one of greatest diagnostic significance and prognostic value.

Moreover, the comparatively extreme rarity of hereditary spastic paraplegia, coupled with its unique clinical manifestations and growing scientific nosological importance, would also seem to justify the recording of seven cases in two families which have recently come under personal observation.

Notwithstanding the complexity which has heretofore attended its pathological identity, and the prevalent confusion concerning its exact nosological grouping, the belief is rapidly becoming established that the essential clinical phenomena accompanying hereditary spastic paraplegia are based upon a fixed teratological defect.

This has been defined as a premature physiological senescence which is localized to certain organic systems. In the study, therefore, of so-called hereditary diseases, we discover that from beginning to end they follow an inevitable course, and unlike other nervous diseases they are the consequence of an inherent constitutional physiological flaw created by the parent or ancestors.

<sup>1</sup>Read by title at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1909.

Hence they are not in any degree acquired, but as Raymond (1) says, "They are inborn, beginning with the conception of the individual."

As such they are destitute of any morbid agent like trauma, infection, intoxication or diathesis, although at times these may augment or complicate such unfortunate conditions. But according to this same author: "They are in reality the result of a purely evolutionary physiological degeneration or consequence of the original constitution of certain nerve tracts or cells, which are wholly independent of any pathogenic agents, and thus develop quite apart from any external influence."

In this they differ from the more common forms of degeneration due to certain well defined intrinsic as well as extrinsic causes. Nor do they present the results of any morbid vascular or inflammatory action, but the primal lesion (if the term be allowed) consists merely in the gradual disappearance of certain systems of cells and fibers somewhere in the cerebro-spinal axis.

Moreover, it is believed that this constitutional omission or physiological defect is capable of being imparted or transmitted to the offspring of such a defective individual, which perpetual hereditary stigma forms the chief etiologic-anatomic factor, as well as its most important evolutionary pathological vice.

This congenital morbid predisposition is anatomically related more especially to the pyramidal tract, although Strümpell (2) claims that he has found it affecting the lateral cerebellar tract and the columns of Goll, beside the territory of the neurones of the lumbar spinal ganglia.

Anatomically, therefore, hereditary spastic spinal paralysis, according to Strümpell, must be termed a combined systemic disease.

Notwithstanding their unusual hereditary character, Raymond (1) objects to the term hereditary diseases being applied to such conditions, but prefers them labeled family diseases, as the former term includes too many complaints which are associated with some efficient morbid cause; while the marked characteristic feature of pathological heredity is its great dissimilarity, which he claims does not obtain in the latter designation.

Under the term family diseases he therefore places, "Only those conditions which affect in an identical form several children in a same generation, which make their appearance at the

same age in all of them, and which originate without the intervention of any morbid agent whether extrinsical or intrinsic.

"Of the three fundamental characters just mentioned the first two may be wanting, as there are isolated and aberrant cases; these are all the more difficult to identify in that the most remarkable peculiarity of family diseases is a great variableness in the symptoms. Hence we must not expect to find the same type everywhere; each family has its own."

The absence of all known efficient cause, is therefore, according to Raymond, the principle characteristic of family diseases.

Recognizing the competency of such a dictum and its associated practical clinical significance when the cases we report are subject to its differential diagnostic scrutiny, it will be found that they not only conform to its teaching, but also sustain the validity of the diagnosis.

Moreover, a careful analysis of the cases already reported by Bayley (3), Strümpell (2), Sachs (4), and others, and regarded as authentically typical, agrees in all essential particulars with the correctness of the position advanced by Raymond, besides strengthening the right of placing our cases in the same category.

#### HISTORY OF CASES

Two years ago there appeared at my clinic a young man to consult me concerning a nervous condition which had troubled him since he was sixteen years of age. Upon examination the information was elicited that other members of the family, including his own mother, were afflicted in a similar manner.

Not until quite recently, however, was it possible for me to secure consent to visit the home for the purpose of making an examination of the other members of the family, when upon investigation the following clinical histories were obtained, which seemed to warrant the diagnosis of hereditary spastic paraplegia.

##### MOATS FAMILY.

CASE I.—Mrs. Clara Moats, age 59, housewife, American, mother of three children, was born on a farm, where she lived until she married.

*Family History.*—The history of the grandparents on both sides is unknown. Father, however, died of paralysis (possibly cerebral hemorrhage) and a half brother suffered from epilepsy, in an attack of which he died. Her mother is still living, at the age of 87, and said to enjoy fair health. No history of nervous diseases traced in any of the collateral relationships.

Husband of the patient, an American, is a strong vigorous man, aged 58, by occupation a night watchman. He denies



syphilis or consanguinity; while tuberculosis, rheumatism and all other diseases were rigidly excluded. His habits are also temperate and he has average intelligence.

The patient herself is the fifth child of a family of ten. Of these two brothers died in infancy, cause unknown, and a third from privation and exposure while in the army. One of the sisters died from cancer, while another still living is said also to be suffering from cancer. The remainder of her family, with the exception of herself, are well.

*Personal History.*—Born at full term, in normal labor, she claims to have been free from accidents and injuries at birth; that she passed through infancy, childhood and the school period without any pronounced illness of nervous symptoms, was not subject to convulsions, headache or the infectious diseases common to childhood. At the age of thirteen her menses were established and they continued regular and normal until the menopause.

She married at the age of twenty-three and is the mother of three children, all boys, now living. During her married life she has not been subject to miscarriage or other female diseases, and has been exceptionally free from illness of all kinds. No untoward event occurred to mar her happiness until after her marriage, when she began to experience marked weakness in her legs, which materially interfered with her walking. This defect gradually grew worse and became complicated with stiffness and contractures of the knee joints, causing the patient serious difficulty in walking, besides assuming the characteristic gait belonging to spastic paraplegia.

In walking the patient now assumes a marked spastic gait, the feet cling to the floor, the legs are pressed firmly together from contracture of the adductors, the knee joints are stiff and one foot passes the other only with difficulty. The toes turn inward with tendency to cross the legs in motion, while the patient treads largely on the anterior part of the foot, thus wearing this part of the shoe most pronouncedly.

Locomotion is therefore performed with great difficulty and is attended with a peculiar jerky movement in which the whole body is projected stiffly forward with sliding or shuffling of the feet. This peculiarity is more or less characteristic of all the cases. The patellar reflexes are markedly exaggerated, but there is no ankle clonus or Babinski phenomenon present. The muscles respond normally to electrical currents and there are no atrophic changes.

The rectal and vesical sphincters are intact, while sensory disturbances are entirely absent. Examination of the eyes excludes nystagmus, as well as all other ocular symptoms. There is no ataxia present, and the upper extremities are free from involvement of any kind. The speech is also free from defects,

while the patient possesses average intelligence and eats and sleeps fairly well. For the past two years she has not been able to walk without the assistance of a cane and her crippled condition is gradually growing worse.

She attributes her misfortune to *child bearing*, although she admits perfect freedom from all complications during her three pregnancies and parturition, and has never suffered from female diseases.

There is no history of trauma, infection, intoxication, syphilis, or diathesis; all these being excluded as etiological factors. Moreover, there is no evidence of inflammatory or morbid vascular reaction.

While pain is not a factor, yet she is mentally depressed concerning her helpless condition and realizes her responsibility for the unfortunate condition of her children by accusing herself of inflicting upon them a similar misfortune to that from which she suffers and recognizes as incurable. Her mental distress has also been emphasized by repeated trials of treatment, all of which have proved of no avail, and this explains to some extent the aversion manifested in permitting me to make a more complete investigation in the family clinical histories.

More especially does she feel the misfortune of her eldest son, as his condition is gradually assuming a more serious aspect. Indeed the age and onset of the disease in each case corresponds with its severity so that each of the three sons present varying degrees of all the symptoms. They, however, are at present all able to work and contribute towards the support of their mother.

CASE II.—George Moats, eldest son, age 34, American, single, by occupation a paper carrier, was born at full term. The labor was normal and free from all complications. No history of convulsions or other diseases during childhood; while a boy was able to run and play like other children and during the school period acquired knowledge readily. Nothing unusual occurred in his life until the age of sixteen, when he began to experience difficulty in walking, which has very gradually increased, until to-day he presents a typical case of spastic paraplegia.

The gait is characteristic, and in walking he jerks himself forward with more or less dragging of the feet and tendency to cross the legs.

In standing or walking there is no ataxia. There is, however, marked hyperadduction of the thighs and the knee joints are strongly contracted. The tendon reflexes are extremely exaggerated, but there is no ankle clonus or Babinski sign present. There are also no atrophic changes, while the muscular electrical reactions are normal. There is no pain or tenderness and the patient is free from all sensory disturbances.

The rectal and vesical functions also are not involved, while nystagmus and other eye symptoms are excluded. His speech is

free from defects and his intelligence is good. In spite of his infirmity the patient works strenuously at his business daily, sings in a choir and even enters enthusiastically into political affairs. His habits are temperate and he denies venereal disease. Tuberculosis, trauma, infections and other etiological factors are excluded. By observation he believes that he acquired the disease from his mother, and the result of our investigation confirms this belief by designating heredity as the only cause for his condition. Every effort put forth by myself to get a photograph of this family has proved futile owing to their extreme sensitiveness of publicity.

CASE III.—Kyle Moats, brother, age 32, American, single, by occupation laborer, was born at full term. No accidents or injuries at birth. No convulsions in infancy, but had measles, whooping-cough and chicken-pox during childhood. Began to walk and talk within first year. Bright mentally, attended public school and made good grades. At fifteen years of age his mother observed he was becoming clumsy in walking, which defect gradually grew worse, until to-day he presents the characteristics of spastic paraplegia.

The gait is typically spastic with a jerky forward movement in walking and tendency to cross legs. Sliding, shuffling feet and more or less tip-toed condition.

The reflexes are markedly exaggerated, but no atrophy of the muscles. They also respond normally to electrical currents. No ankle clonus or Babinski phenomenon present. Nystagmus and all other eye symptoms are excluded. The speech is normal and intelligence good. There is no ataxia present, neither are the vesical or rectal functions involved, while the upper extremities have also escaped, their functions being perfectly normal. No cause is assigned by the patient for his misfortune other than his belief that he gets it from his mother.

Tuberculosis, syphilis, rheumatism, and all other infectious diseases were excluded. No organic visceral disease present. No history of trauma; no skull or other osseous deformities. Heredity is therefore the only plausible etiological factor which can be assigned for his misfortune. At the age, however, of twenty-one he claims to have had a convulsion, attacks of which have continued in mild form at varying intervals ever since, thereby establishing a confirmed petit mal epilepsy which is still in progress.

The symptoms, however, of this did not appear until six years after his mother had noticed his clumsy walking or the inception of his spastic paraplegia. It is therefore difficult to allow this to militate against the diagnosis, as it should be regarded as evidence of an acquired complication rather than a primal etiological inherent one or congenital defect.

CASE IV.—Louis Moats, a younger brother, age twenty-four, single, painter by trade, has been subject to similar diseases of childhood as his two brothers, was born at full term, labor normal, no instrumentation. No accidents or injuries during birth. Began to walk and talk at two years of age. No history of convulsions or other nervous symptoms. Remained perfectly well until fourteen or fifteen years of age, when he began to show signs of weakness of lower extremities, which interfered greatly with his getting about. This has very gradually grown worse, until now he presents a beginning spastic gait with more or less stiffness of knees, rigid contractures, a jerky movement in walking and essentially similar characteristics to those of his mother and brothers.

The reflexes are exaggerated and a slight ankle clonus is present, but no Babinski phenomenon. There is no ataxia. Muscular reaction to electrical currents is normal and there are no atrophic changes. The upper extremities are not involved in the process, neither is there any nystagmus or other ocular disturbance. The sensory functions are also normal, while the rectal and vesical sphincters are intact. The speech is free from defects and intelligence is fair. No deformities of the skull. His general health is good and he works daily. His habits are temperate and he denies venereal disease. No cause is assigned for his condition other than its known hereditary character.

FAMILY NO. 2.

About one year ago, Louise Cannon, age  $4\frac{1}{2}$  years, was brought to the Children's Clinic, because of failure to walk. Dr. Frank Neff, to whom I am indebted for the privilege of reporting these cases, noticed that the mother was also a cripple. Upon investigation it was found that she as well as two of her children presented evidence of what proved to be hereditary spastic paraplegia. The histories are as follows:

CASE V.—Mrs. Cannon, age 43, housewife, American, mother of three children, all living. Has had two accidental miscarriages, one within past few months, leaving behind a menorrhagia.

*Family History.*—Unfortunately the genealogy of this family, like that of the other, is very incomplete, as nothing is known of the history of the grandparents on either side. Patient, however, claims her father died of heart disease and her mother of cancer. She was the fourth child of a family of eight. Two brothers and one sister, however, died in infancy, cause unknown. The remainder still survive. One of these, a sister, is said to be suffering from spastic symptoms similar to her own, but as she lives far away from Kansas City I have not had an opportunity to examine her.

The husband of the patient is a strong vigorous Englishman by birth, aged 46 years, and enjoys the best of health. By occupa-

tion he is a laborer. He denies syphilis or consanguinity. Is not subject to tuberculosis, rheumatism or other infectious disease, no history of trauma, but claims his father was a confirmed dipsomaniac, while his mother enjoyed good health, as well as the rest of his family. Nothing, however, is known of his grandparents.

*Personal History.*—Born at full term, with no accidents or injuries at birth, the patient claims that as a child she could run and play as well as other normal children, but noticed in walking she had a slight limp, while her toes turned inward and legs were weak. During the school period she attended to her studies without any ill effects, making good grades and suffering from no nervous symptoms like convulsions, headache, neuralgia and other common conditions. While her legs were weak she does not know at what age her present trouble began, but at the age of thirty she married, apparently enjoying good health.

For the past ten years, however, or during her child-bearing period, the patient has observed that her walking has very gradually become more and more impaired, until to-day locomotion is performed with great difficulty. This is also associated with a marked spastic gait with stiffness and rigidity of the knee joints. Efforts at walking are attended with a sudden jerky movement which projects the body forward; the feet slide or scrape the floor, turn inward, and assume a tip-toed condition, which wears out the shoes at the toes rapidly, while the legs tend to cross each other.

These characteristics are present more or less in all the cases reported, but they are more marked in this mother and her youngest child.

The muscles present no atrophy and respond normally to electrical currents. There is no ankle clonus or Babinski phenomenon, while the rectal and vesical sphincters are intact.

The sensory functions are also normal and there are no ataxic symptoms present. Nystagmus is excluded, as well as all other eye symptoms. The upper extremities are free from all involvement. The speech is also unimpaired, while her intelligence is fair. No history of convulsions, trauma, syphilis or other infections. *She can assign no cause for her unfortunate condition.* Beyond her spastic paraplegic state, her general health is good. She eats and sleeps well and is able, although with great difficulty, to attend to her household duties and to care for her three children.

John Cannon, aged ten, her eldest boy, seems to have escaped the fate which belongs to his mother, as well as his brother and sister, he showing no evidence at present of any symptoms of the disease.

CASE VI.—Frances Cannon, her daughter, age 7½ years, was born at full term, free from accidents or injuries. Has had no convulsions, but was subject to measles and whooping-cough dur-

ing her infancy. Is said to have nursed at the breast for over two years because she wanted to. Physical health, however, said to be good, but mental development somewhat tardy. There is no macro- or microcephalia, or other deformities of the skull. At six years of age her mother noticed she was becoming quite clumsy in walking. This gradually increased until to-day locomotion is performed with difficulty. She can, however, stand and walk without assistance, and there is no evidence of ataxia. In walking the body is jerked forward, the toes turning inward with a tendency to cross the legs, and the feet drag or scrape the floor. She complains of stiffness of the joints, while the tendon reflexes are exaggerated. There is no sphincteric involvement, the patient retaining control of the rectal and vesical functions. The muscular electrical reactions are normal and there are no atrophic changes present. There is, however, a slight ankle clonus, but no Babinski phenomenon.

The upper extremities are free from all involvement. The sensory functions are also normal. The speech is free from defects, although the patient is somewhat mentally dull and inefficient. There are no ocular disturbances of any kind. While her general health is good, her mother states that the condition is gradually growing worse. There is no evidence of trauma, or any of the infections; and the only cause that can be assigned for her misfortune is heredity.

CASE VII.—Louise Cannon, daughter, age  $5\frac{1}{2}$  years, was born at full term, free from all complications, the labor being normal. Like her sister she had measles and whooping-cough. She also has had frequent attacks of pin worms but never suffered from convulsions. Was not able to stand alone until three years of age, and is now unable to stand or walk without assistance. While slow in learning to talk she now does so fairly well. When she puts forth an effort to walk it is accomplished with a similar jerky movement like that of her mother and sister.

It is also associated with a tendency to cross the legs with dragging of the feet and a tip-toed method. The gait is characteristic of spastic paraplegia. The reflexes are markedly exaggerated, but there is no ankle clonus or Babinski phenomenon. There is also an entire absence of any sphincteric involvement, no nystagmus or other ocular symptoms, while the sensations are normal. Like her mother and sisters the upper extremities are free from all involvement, their functions being perfectly normal. The general health of the patient is good. No cause is found to account for her condition other than heredity.

#### DIFFERENTIAL DIAGNOSIS

In analyzing the clinical features of these seven cases and carefully comparing them with the essential characteristics which

the different authorities describe as belonging to hereditary spastic paralysis, it would appear that this diagnosis is well sustained.

For instance, Sachs (4) in his valuable work on "Nervous Diseases of Children," in speaking under the heading of hereditary spastic paraplegia, says: "The history of a case exhibiting the symptoms of spastic paraplegia of the lower extremities with increase of the reflexes, with rigidities and contractures, without involvement of the vesical or rectal reflexes; without atrophy, without disturbances of speech and nystagmus, would be sufficient to place the case in this category, provided the hereditary character of the affection could be established."

Now by careful examination of the cases we report it will be found that every clinical prerequisite required by this author is actually present and demonstrable, even including the all-important factor of their hereditary origin.

Each case therefore exhibits undoubted symptoms of spastic paraplegia with increase of the reflexes, as well as rigidities and contractures. Moreover, there is no involvement of the rectal and vesical sphincters. No atrophy or disturbances of speech, no nystagmus or other eye symptoms; while the hereditary character of the affection cannot be disputed.

There may, however, be some difference of opinion as to the ultimate physiological and pathological condition present, yet it seems certain that it did not arise from any diathetic condition or trauma, neither is there any evidence of any inflammatory products or morbid vascular lesions, but all the cases followed a definite course in which several members of the same family, in the same generation are alike affected, while the mother of each series presents similar clinical phenomena, thus establishing its undoubted hereditary family origin.

It is also evident from the clinical histories that tuberculosis, alcoholism and syphilis play no part in their etiology, and a further proof of the latter not having any influence in its production might be inferred from the fact that anti-syphilitic treatment has been used in some of the cases without yielding any benefit.

1. While it is true that some of the symptoms simulate Friedreich's ataxia, yet there are many reasons for eliminating this form of family disease. For instance, in all the cases we report the gait is distinctly spastic and not staggering or ataxic, and there is no involvement whatever of the upper extremities. No

speech defects. No deformities like curvature of the spine or talipes; the reflexes are also exaggerated and not absent, and there is no history of its following some infection or other external morbid agent.

2. It cannot also be classed as Little's disease, for the labors were normal and attended with no accidents or injuries, no convulsions except one case; and this did not develop until the twenty-first year, or 6 years after the inception of spastic paraplegia. Moreover, the upper extremities are not involved in any of the cases; while Dana (5) claims that in Little's disease "the arms become much stiffened and contracted and the hands are flexed so that the patient can neither walk nor help himself; while epilepsy and mental deterioration also may develop at the time of puberty or adolescence."

3. In spite of its close resemblance in many particulars to hereditary cerebellar ataxia, this can be excluded by the absence of ataxia; no waddling or rolling gait, no nystagmus or other eye symptoms, no speech defects, no deformities of the feet, no cranial nerve involvements, and no actual mental deficiency, the latter of which is emphasized in the typical case reported by Patrick (6).

4. Neither should the condition be confounded with anomalous forms of infantile spastic cerebral palsies, since the symptoms did not appear until a considerable time after birth, ranging from  $2\frac{1}{2}$  to 14 years, or even later. Nor were there any convulsions with but one exception, and this was acquired and not congenital in origin; and there is no evidence of defective mental development. The skull is also free from deformities, there being no macrocephalic or microcephalic conditions present.

5. From amyotrophic lateral sclerosis the entire absence of any muscular atrophy and freedom from involvement of the upper extremities would in themselves seem sufficient to exclude it from further consideration.

There may, however, be objection to classifying both families under one classical type, by reason of the fact that in one family the symptoms developed early in life while in the other family they are alleged not to have appeared before the fourteenth year, and even as late as the twenty-seventh year after birth.

In describing the disease, however, Strümpell (2) says: "The disease usually begins somewhere between twenty and thirty, but



some cases apparently occur in children." Raymond (1) also says that "Each family has its own way of working out the same family disease, just as if the factor of developing in different families caused each morbid type to receive a somewhat different stamp."

It will also be observed that in each of these families there are several children affected with the same disease; and while perhaps the symptoms did not make their appearance at the same time of life, yet in each family the children of that family became affected at comparatively the same age and in the same generation. It is also certain, after thorough investigation, that no morbid agent gaining entrance either intrinsically or extrinsically caused the condition, but the etiology in each family can be directly traced to the mother, thus establishing beyond doubt its hereditary family origin. In view of the facts thus submitted we feel justified in pronouncing the cases reported as belonging to that class of family diseases known to-day as hereditary spastic paraplegia.

*Prophylaxis.*—Inasmuch as those inheriting such a malady are doomed from the very moment of their conception, as physicians we must remember that our mission pertains to the prevention as well as the cure of disease.

The burden of affliction entailed upon a possible innocent progeny, by the marriage of those possessing the power of transmitting the pernicious effects resulting from a pathological heredity, is sufficient to demand not only the social restriction of such defectives, but forbidding them the actual right of entering into wedlock.

Those easy American habits, however, which permit unchecked the free social mingling of all classes of society without regard to the laws of health and heredity, often result in the marriage and intermarriage of the diseased and defective, as well as unfit individuals, which also include consumptives, epileptics, syphilitics, and even the insane and more demented specimens of humanity; all of which in some of the states, are still allowed to be free from legal restraint.

As physicians we know too well the sad import of such unfit and ill-assorted marriages, hence we believe that in certain cases and to some extent, at least, *marriage should be governed by law*; that is, by wise and judicious legislation, for in the light of facts

who can truthfully argue that it is nobody's business whom we marry.

The vast amount of preventable disease which is filling thousands of premature graves and destroying the hopes and happiness of many people in every community, certainly demands the earnest interest and attention of the medical profession. Any work that we as physicians do towards influencing the public to study the laws of health, as well as heredity, will undoubtedly produce its exact equivalent of results in the prevention of disease, which is the highest ideal of medical practice.

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# THROMBOSIS OF THE CERVICAL ANTERIOR MEDIAN SPINAL ARTERY; SYPHILITIC ACUTE ANTERIOR POLIOMYELITIS<sup>1</sup>

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Thrombosis of the vessels of the spinal cord is a diagnosis that should be made more frequently, for while non-traumatic hemorrhage is rare, thrombosis is of frequent occurrence. With the exception of the case reported in this paper, I know of no instance in which the thrombosis was demonstrated by necropsy to be confined to a small portion of the anterior cervical supply. The case is also a contribution to syphilis as a cause of acute anterior poliomyelitis; to the position of the sensory tracts in the spinal cord; and to the pathology of brachial paraplegia. It demonstrates furthermore that occlusion of a limited portion of the anterior arterial system of the spinal cord or medulla oblongata produces a symptom-complex that should be capable of diagnosis even without necropsy, although the symptoms will vary with the level of the occlusion. The paper is in this way a further contribution to the subject of occlusion of the uppermost portion of the anterior spinal and adjoining portion of the vertebral arteries described by the author.<sup>2</sup>

John W., No. 456 Laboratory, had been employed in the Philadelphia General Hospital. He had been admitted in 1901 with symptoms of meningitis, but had recovered. On the morning of December 23, 1905, he was lifting blocks of ice with the assistance of another man, each block weighing about 100 pounds. He had lifted four pieces when about eight o'clock A. M. he began to have a sensation of coldness and pain between the shoul-

<sup>1</sup> Read at the Thirty-fifth Annual Meeting of the American Neurological Association, May 27, 28 and 29, 1909.

<sup>2</sup> Spiller, THE JOURNAL OF NERVOUS AND MENTAL DISEASE, December 1908.

ders about fifteen minutes after lifting the last piece. The hands began to grow stiff and he placed them under the spigot, allowing hot water to run over them. Ten or fifteen minutes later the lower limbs began to be numb and stiff. He lost power in the upper limbs within a very short time.

Notes made on December 26 state that he was totally paralyzed in the right upper limb and had not a single movement of hand, forearm, fingers or upper arm. The left forearm could

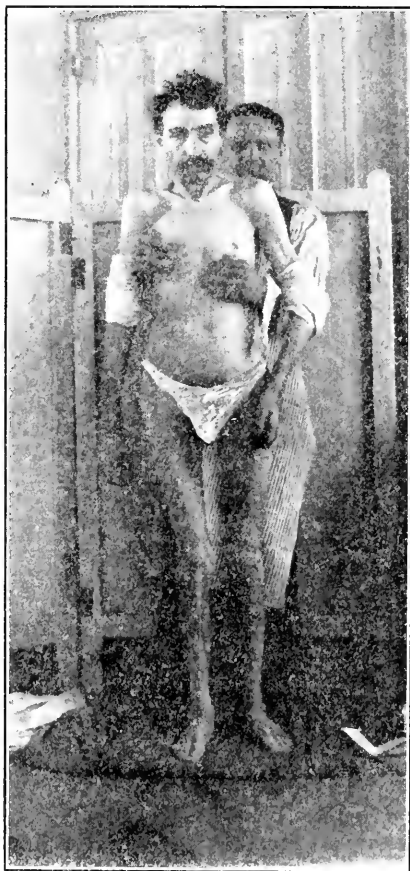


FIG. 1. The man is not held up, the orderly's hands are barely touching him. He is bearing full weight on his lower limbs.

be flexed on the arm, but could not be extended, and he had some power of elevation of the shoulder. The lower extremities were weak in all movements, but there was no pronounced palsy.

Breathing was entirely diaphragmatic. Hypalgesia was noted between the nipples and clavicles and in the upper extremities. He had retention of urine with overflow, and no control of the bowels. The patellar reflexes were preserved and the Babinski sign was not obtained.

Notes made by me January 22, 1906, are as follows: The voluntary power in the lower limbs is not much diminished. The patellar reflex is prompt on each side. The lower limbs are emaciated to some extent. Babinski's reflex is slight on the right side, but there is no movement of the big toe on the left side. Sensation for touch is normal in the lower limbs. Pain and temperature sensations are much affected in front of each thigh, especially in the left, and to some extent on the back of the left thigh. Sensation below the knees is unaffected, except on the sole of the left foot, where sensations of pain and temperature are impaired.

Sensation for touch is normal in the trunk and upper limbs. Sensations of pain and temperature are greatly impaired, if not lost, over the whole of the front of the trunk, as high as the third rib on each side, also in both forearms as far as the elbows, and on the inner side of the left arm above the elbow, although the disturbance is not so great as in the trunk. He has incontinence of urine and feces.

The notes of an examination by Dr. Knipe January 26, 1906, are as follows: O.D. pupil 5 mm. Iris reacts freely to light. O.S. pupil 4 mm. Iris reacts rather sluggishly to light. O.S. reacts more freely to convergence. O.S. pupil smaller on account of iris infection (?), iris is more cloudy than iris of O.D. O.D. media clear and fundus negative. O.S. media clear and fundus negative. Ocular movements unimpaired.

Further notes made by me March 19, 1906, are as follows: The lower limbs are emaciated, but equally in all parts, and the limbs are somewhat spastic. The patellar reflex is much exaggerated on each side and equally, although the right may be a trifle more so than the left. Patellar clonus is persistent on the left side, but can not be obtained on the right side except when the muscles are slightly relaxed, as it is prevented on this side because of the rigidity of the muscles. Ankle clonus is not obtained on either side. Achilles tendon reflex is not obtained on either side. The Babinski reflex is present and typical on the right side, but is uncertain on the left side. The movements are free in all parts of the lower limbs, and resistance to passive movements is good in these limbs. Involuntary jerking of the lower limbs occur, especially of the right lower limb. He is able to stand and walk unaided, even with the eyes closed. The right lower limb is slightly weaker than the left.

The man knows when he wishes to pass urine, but he can not hold the urine long. Sense of position is preserved. Breathing

is almost entirely diaphragmatic, and he hardly raises the ribs at all. He can not move the fingers of the right hand at all, and he has very little power of motion at the right shoulder and right elbow. He has a sore on each shoulder from friction. The right

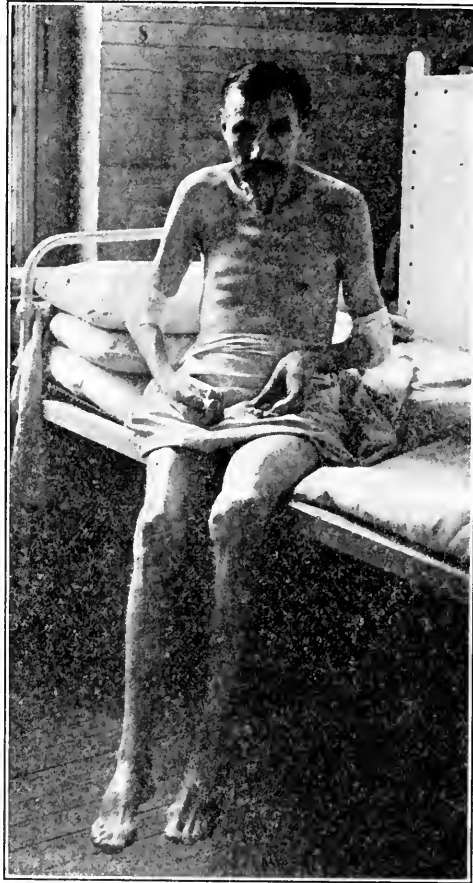


FIG. 2. The contractures of the upper limbs are well shown.

fingers are flexed into the palm, the right thumb is extended. The fingers can not be forcibly fully extended. The muscles of each forearm and of the upper part of the arms are flabby and wasted. There is tendency to flexor contracture at the right wrist which is readily overcome by passive movements. No contracture at the right elbow. The right triceps and biceps reflexes and wrist reflexes are entirely lost. No tenderness to pressure anywhere.

The fingers of the left hand are very slightly flexed and can be fully extended. The left hand is contracted in over-extension at the wrist, and is in contrast to the flexor contracture of the right hand. The contracture of the left hand can be easily overcome by passive movement, as the contracture in each hand is only in an early stage. Marked flexor contracture has occurred at the left elbow, this can be overcome with difficulty, and the attempt to do so causes considerable pain. He can raise the left upper limb only at the shoulder, and performs this movement chiefly by action of the trapezius, the deltoid functioning very little; on the right side the deltoid is a little more active than on the left.

The cranial nerves are normal. The right pupil is larger than the left. The reaction to light and in accommodation and convergence is prompt in each eye. The movements of the eyeballs are normal. The movements of the head are free in all directions.

Sensations of heat and cold are normal in the whole right lower limb, but are greatly impaired in the whole left lower limb; here both ice and warm water are felt as warm. These sensations are greatly impaired over both sides of the trunk as high as the first rib on the left side, and as high as the second rib on the right side, and in the entire left upper limb as high as the clavicle. They are considerably impaired in the right upper limb, and both heat and cold are felt as heat. Sensation of touch is normal in all parts of the body. Sensation of pin-prick is normal in the right lower limb, except in the uppermost part of the thigh near the trunk and middle of the thigh, where it is impaired. It is greatly impaired in the left thigh, and much less so in the left leg below the knee. It is greatly impaired in the trunk and left upper limb in the same distribution as is temperature sensation. It is much impaired in the right upper limb except near the shoulder. Sensations of touch, pain and temperature are normal in the face.

It was recorded on May 9, 1906, that the man was walking about the ward alone, and did so fairly well. He died November 1, 1908, in the service of Dr. Charles K. Mills, and to him I am indebted for the pathological material.

The first appearance of softening begins at the fourth cervical swelling. A cavity at the highest part of this segment is confined to one anterior horn, but at a slightly lower level both anterior horns show softening, with cavity formation at the posterior part of each horn, extending slightly into the white matter. The antero-lateral portion of each side of the section shows secondary degeneration, as does also the anterior part of the posterior columns, in which a small collection of fatty granular cells is found. Nerve cells are present in both anterior horns and are more numerous in the right anterior horn.

At the fifth cervical segment the cavity is again confined to one anterior horn, otherwise the condition is much the same as in the fourth cervical segment. Both anterior horns contain nerve cells, and they are more numerous in one than in the other. A blood vessel in the posterior septum near the commissure shows great thickening and some round cell infiltration.

At the sixth cervical segment each anterior horn contains a separate area of softening with many fatty granular cells, and the whole anterior part of the cord, including the anterior part

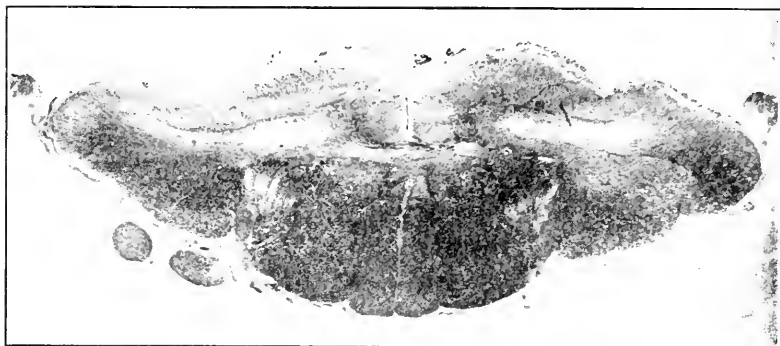


FIG. 3. Photograph of a section from the seventh cervical segment, showing intense degeneration of the anterior part of the cord. The pyramidal tracts are almost intact.

of the posterior columns, presents secondary degeneration. The anterior horns at this level contain few nerve cells.

The condition is much the same at the seventh cervical segment, but at the eighth cervical segment the areas of softening are more extensive; on one side extending to the anterior fissure, and on both sides extending somewhat beyond the anterior horns into the white matter. The crossed pyramidal tracts are slightly affected, but only in their anterior portion.

At the first thoracic segment the softened area forms one lesion, occupying the entire anterior part of the cord in front of the anterior horns. This is the region of greatest destruction. Some of the vessels in the anterior part of the pia at this level show much thickening, and the anterior spinal artery has great proliferation of its intima. Some of the vessels in the area of softening at this level are almost completely occluded.

The area of softening becomes less extensive at the second thoracic segment, and disappears entirely at the upper part of the third thoracic segment.

Above and below the region of softening secondary degeneration is seen. The crossed pyramidal tracts are partially degenerated into the lumbar region.



Round cell infiltration is moderate in intensity in the cervical swelling, and slight elsewhere over the cord. It is more pronounced in the pia of the optic nerves and medulla oblongata.

The anterior roots of the cervical swelling are much degenerated.

The occlusion of the blood vessels of this case occurred only in the lower cervical and first thoracic segments, and only in these regions were the blood vessels distinctly thickened, and



FIG. 4. Photograph of a section from the first thoracic segment, showing complete degeneration of the anterior part of the cord. The posterior part of the cord is almost intact.

here only in marked degree in the anterior part of the cord. This proliferation of the intima with the wide-spread though moderate round cell infiltration of the pia is strongly indicative of syphilis.

A summary of this case is as follows: About four years previous to his paralysis the patient had what was supposed to be spinal meningitis. He recovered, but probably had as a result thickened blood vessels of the spinal cord. He had been in excellent health, according to his own statement, and was employed at the time the paralysis occurred in an ice house, and with another man had been lifting blocks of ice weighing about 100 pounds. He had lifted four of these blocks before any symptoms were noticed. Fifteen or twenty minutes after lifting the last block he began to have pain between the shoulders, and felt numb and weak in the upper extremities. Ten or fifteen minutes later he felt weak and numb in the lower limbs, and was then brought to the hospital. When first seen by me in January, 1906, he had recovered largely the use of the lower limbs, but

these limbs were somewhat spastic. He had normal sensation of touch everywhere. The patellar reflexes were exaggerated and Babinski's reflex was present on the right side. He had much impairment of temperature and pain sensations in the upper part of the thighs, over the trunk as high as the first or second rib, and in both upper limbs. He had incontinence of the bladder and rectum. He was almost completely paralyzed in the upper limbs, and these limbs were much wasted. The case was reported before the Philadelphia Neurological Society as one of probable *hematomyelia* of the cervical enlargement. There seemed to be little doubt that the lesion must be in the cervical enlargement and first thoracic segment, as it would be impossible to explain the symptoms in any other way. It was believed to be a lesion affecting the gray matter of the anterior horns and extending into the white matter. The posterior portion of the cord, from the symptoms, must have escaped. The investigations of Minor have shown that central *hematomyelia* causes the dissociation of sensation as does *syringomyelia*, and the rapidity of development of the symptoms suggested hemorrhage. A probable thickening of blood vessels was mentioned, but as no case is on record, so far as I know, in which thrombosis was confined to the distribution of a small part of the anterior spinal arterial supply, with such symptoms as occurred in this case, one may be pardoned for diagnosing hemorrhage in place of thrombosis. Minor,<sup>3</sup> says that in the many cases of *hematomyelia* observed by him the hemorrhage occurred spontaneously only in two cases, in all the others trauma seemed to be the cause.

The microscopical examination has shown that the lesion was thrombosis. The anterior spinal artery and the branches coming from it, in the eighth cervical and first thoracic segments were much thickened, and some of these vessels were almost entirely occluded. They were doubtless entirely occluded in areas not obtained in the sections. The softening was intense in the first thoracic and eighth cervical segments, as shown by the presence of numerous fatty granular cells and a few minute hemorrhages. "The anterior horns were softened above these regions as high as the fourth cervical segment. The lesion implicated the anterior horns, and the whole anterior part of the cord in advance

<sup>3</sup> Minor. *Handbuch der pathologischen Anatomie des Nervensystems*, Vol. 2, p. 1031.

of the crossed pyramidal tracts, and the extreme anterior part of the posterior columns. The pyramidal tracts were partially degenerated. As far as location is concerned the clinical diagnosis was exact. The round cell infiltration of the pia, moderate in the spinal pia and more pronounced in the cerebral pia, together with the proliferation of the intima of the anterior spinal artery and its branches in the lower cervical swelling, indicate syphilis as the cause of the lesions.

The case is extremely important in showing that thrombosis may occur in a very limited distribution of spinal vessels. We hear little of spinal thrombosis, although we are very familiar with thrombosis of the cerebral vessels. Spinal thrombosis is not a rare condition, and is probably the cause of most of the apoplectiform palsies that occur in myelitis. Then the occlusion is usually widespread, or at least implicates most of the vessels in any one transverse region of the cord. In the case reported by Dr. Mills and myself,<sup>4</sup> in 1903, paralysis of all four limbs and of one side of the face developed in about five hours. Some of the blood vessels of the cervical swelling had much thickened walls and some of those in the pia at this level were almost occluded by the intense proliferation of the intima. Thrombosis was doubtless the cause in this case of the rapidly developing paralysis.

That such palsies occur frequently is well known and it seems unnecessary to devote much space to the demonstration of this fact, and yet two cases recently observed by me may be alluded to briefly in way of illustration: E. M., aged 27 years, had had slight ataxia occasionally in walking about six months before any weakness developed, but he had not had any loss of motor power. He sat down in a chair on one occasion, and after about fifteen minutes tried to rise but was unable to do so. He had to be assisted from the chair and was in bed a week before he could stand at all. He has now symptoms of postero-lateral sclerosis.

Mrs. C. C., aged 28 years, had deserted her husband because he had venereal disease. She had been walking much on a certain day, and about nine o'clock in the evening of this day started to go to bed and found that she was weak in the knees,

<sup>4</sup> Mills and Spiller. *JOURNAL OF NERVOUS AND MENTAL DISEASE*, 1903, p. 30.

and that she could not empty the bladder. At nine-thirty she walked to the bath-room, and on returning fell to the floor and was at once unable to stand even with support. She is now very weak and spastic in the lower limbs. I could add to these the reports of other cases of very rapid paralysis in myelitis, some with necropsy, but it seems unnecessary to do so.

I know, as previously stated, of no example recorded in which a small part of the anterior median spinal artery with its branches were so clearly shown to be the seat of thrombosis as in this case I now report. Thrombosis is possibly the cause of the symptoms in acute anterior poliomyelitis, as has been emphasized especially by Batten,<sup>5</sup> although he has not originated this view. He believes that this disease is caused by primary thrombosis of a branch or branches of the anterior spinal artery supplying the gray matter of the anterior horns, and that such thrombosis may be produced by many and various forms of infection, and that the disease is not due to a specific infection. The condition is more likely to occur in the lumbar region owing to the blood supply of this portion of the cord being at a point most distal from the heart, and to the long course of the reinforcing arteries.

He refers to the work of Prevost and Cotard, by which it was shown that congestion, hemorrhages and exudation of cells may be the early result of obliteration of small vessels. Batten refers to the well-recognized fact that the lesion conforms closely to the distribution of the anterior median artery, and he thinks it is reasonable to conclude that it is the result of occlusion of vessels. This view, however, is not generally accepted.

More recently syphilis as a cause of acute anterior poliomyelitis has been discussed. Preobraschenski<sup>6</sup> states that the anterior horns are often affected in spinal syphilis, and the condition has been described as chronic or subacute poliomyelitis, as parasyphilitic muscular atrophy, or as syphilitic amyotrophy of the Aran-Duchenne type. He states also that all the cases described under these names presented much that was atypical both clinically and anatomically for progressive muscular atrophy or poliomyelitis, but characteristic of syphilis. He refers to

<sup>5</sup> Batten. *Brain*, 1904, p. 376.

<sup>6</sup> Preobraschenski. *Neurologisches Centralblatt*, November 16, 1908, p. 1,069.

cases reported by Dejerine, Schmaus, Dinkler, Raymond, Leri, Olivier and Halipre, Lannois and Parot. He states that paralysis with later atrophy is common from syphilitic meningomyelitis and hardly worth discussion. In all the cases referred to muscular atrophy and paralysis were more or less permanent, but were not the only signs. In almost all the cases the findings were diffuse alteration of the cerebral membranes, of the vessels, of the white and gray substance, of the roots, etc.

The case that Preobraschenski reports is as follows: A woman, 46 years old, who probably had acquired syphilis and had used much alcohol, felt on one night great weakness of all the limbs; the weakness increased. The exact period of the development of the weakness is not stated clearly. The cranial nerves were normal. Pupils were equal and did not react to light. Both upper limbs and the right lower limb were completely paralyzed, and the left lower limb was almost paralyzed. The head alone could be moved freely. All the muscles were flaccid. The tendon reflexes were normal in the left upper limb, were weak in the right upper limb, and lost in both lower limbs. Babinski's sign was not obtained. Sensation was normal. Pressure on the nerve trunks of the upper and lower limbs was painful. The urine was not passed for a time. The paralyzed muscles became atrophied. Death occurred on October 4, '07, the patient having been admitted to the hospital on July 26, '07, two days after the beginning of the symptoms. The case seemed clinically to be one of polyneuritis with paralysis of the abdominal muscles without sensory disturbances. The microscopical examination showed acute poliomyelitis, extending from the cervical swelling to the end of the cord. The thickening of the vessels, the round cell infiltration, the implication of the pia, indicated syphilis. Preobraschenski regards his case clinically and pathologically as a pure example of acute poliomyelitis, and states that the text-books of neurology and the literature in general make no mention of syphilitic acute poliomyelitis; his case in his opinion fills the gap. He acknowledges that one case is not sufficient to establish a symptom-complex, and that further investigations are necessary. Symptoms of cerebral origin are to be expected.

The case that I have reported in this paper differed clinically from acute anterior poliomyelitis in the sensory symptoms, as

these are absent in poliomyelitis, and yet the lesion was acute, was thrombosis of the anterior spinal arterial supply, and caused the sensory symptoms by extension of the lesion into the white matter of the antero-lateral columns. It would seem either that in some cases the distribution of the anterior spinal artery may be more extensive than in others, or that the escape of the white matter so far as indicated by the absence of sensory symptoms is caused by less involvement of the branches extending into the white matter. We must believe that the branches of the anterior spinal artery extend at least a certain distance into the white matter. This case of mine was not therefore a typical one of acute anterior poliomyelitis clinically, and yet it affords considerable support for the views of Preobraschenski.

Observations made during the recent epidemics of poliomyelitis, that have been so numerous, have shown that our views regarding this disease needed broadening. In some cases pain has been so prominent that neuritis has been seriously considered, and to many the association of multiple neuritis with poliomyelitis seems probable. I<sup>7</sup> have published the report of two cases of poliomyelitis, with exaggeration of the patellar reflexes, and have referred to a few similar cases (Pearce, Clark and Atwood, Minor). In another of my cases of poliomyelitis a necropsy was obtained and considerable involvement of the lateral columns was found, although the degeneration of the anterior horns of the mid-lumbar region prevented exaggeration of the patellar reflexes. Had the lesion of the anterior horns been confined to the sacral region we should expect exaggeration of these reflexes in such a combination of lesions, and yet loss of tendon reflexes has been regarded as one of the most striking features of anterior poliomyelitis.

The lesions in this case afford evidence that the fibers of pain and temperature ascend in the antero-lateral columns, possibly but not necessarily in the tracts of Gowers, and that the fibers of touch ascend in the posterior columns. This subject has been fully discussed by Petré,<sup>8</sup> and I<sup>9</sup> have written on it elsewhere.

Investigations have shown that Gowers's tract does not terminate entirely in the cerebellum and that a part enters the cere-

<sup>7</sup> Spiller. *JOURNAL OF NERVOUS AND MENTAL DISEASE*, 1908, p. 261.

<sup>8</sup> Petré. *Skandinav. Archiv f. Physiologie*, Vol. 13, 1902.

<sup>9</sup> Spiller. *University of Penna. Medical Bulletin*, July and August, 1905.

brum. The whole anterior portion of the lower cervical sections was degenerated, pain and temperature sensations were greatly affected in the trunk and upper limbs, while tactile sensation was normal everywhere. The partial escape of pain and temperature sensations in the legs below the knees may be explained by the "law of the eccentric and posterior position of the long fibers," as these fibers in the lateral columns are probably the most posterior of those conveying pain and temperature sensations. As the posterior columns were intact, except in their extreme anterior portion, the escape of tactile fibers is readily explained, *i. e.*, as the result of the integrity of these columns. This case seems to be another proof of the representation of tactile fibers in the posterior columns. Petren believes however that tactile fibers are represented also in the lateral columns.

I have observed a number of cases of persistent brachial paraplegia with at first impairment of the motor power of the lower limbs, and later complete or nearly complete recovery of power in these limbs, but necropsy in this type is exceedingly rare, and the case J. W. is therefore an important contribution to the subject.

I am indebted to Dr. A. J. Smith for the photographs of the spinal cord.

## Society Proceedings

### AMERICAN NEUROLOGICAL ASSOCIATION

Thirty-fifth Annual Meeting, Held at New York City, May 27-29, 1909

The President, DR. S. WIER MITCHELL, in the Chair

*(Continued from page 553)*

### EXHIBITION OF A NUMBER OF LANTERN SLIDES ILLUSTRATING INTERESTING PATHOLOGIC CONDITIONS

By M. Allen Starr, M.D.

In the course of a year there accumulates in the Pathological Laboratory of the College of Physicians and Surgeons a number of very interesting specimens, and for photographs of these Dr. Starr is indebted to Dr. Larkin of the Pathological Laboratory.

1. The first was a section of the spinal cord from a case of anterior poliomyelitis that occurred in the last epidemic. The child died in the fifth day of the disease and in a low power specimen can be seen enormous infiltration of the gray matter, and distention of the capillaries; the motor cells of the cord, which should come out in this figure perfectly, have practically disappeared in connection with the general infiltrating lesion of the anterior horn. These acute cases are rather rare.

2. The next specimen was one of the first lumbar region from the spinal cord of a case of anterior poliomyelitis in a child who died six months after the onset of the disease, showing bilateral infiltration of the anterior horns and a remarkable rarefaction of the anterior horn, absorption of almost all the anterior horn, leaving such a thin friable tissue as to make it almost like a case of syringomyelia.

3. The next was a section of multiple sclerosis of the spinal cord, the sclerotic patches being visible here and there and invading in this case also the anterior horn of one side. That is not a mere accidental fracture of the tissue. Multiple sclerosis, Dr. Spiller has brought out recently, is in the pathological laboratory a rare lesion in America. It is certainly a rare lesion in our clinical observation. Dr. Starr found in his clinic only 51 cases of multiple sclerosis in 31,000 consecutive cases, which shows its rarity in a clinic where they are on the lookout for it and are liable to make the diagnosis. Dr. Starr was surprised to be told by one of his clinical assistants that in Berlin they see as many cases of multiple sclerosis as they do of tabes. There were nearly 500 cases of tabes during the same period. Here the ratio would be only as 1-10. Dr. Starr showed this as the pathological specimen of multiple sclerosis occurring during seven years.

4. Dr. Starr thought the experience of this Association in acute infectious myelitis or acute myelitis following an acute disease of any kind



would make the members interested in the specimen from the spinal cord of a patient dying twelve days after the onset of the gripe. Here was a condition of acute hemorrhagic infiltration of the cord, there being enormous distention of the capillaries everywhere, and the exudation from the capillaries of red blood corpuscles which was present throughout the entire cord, causing a disintegration. Never had he seen a specimen that presented just that appearance.

5. Of course when you see one case you always see another and here was a second case of myelitis subsequent to typhoid fever, the patient dying on the eighteenth day, probably twenty-two days after the onset of the typhoid fever. There is enormous distention of the capillaries and hemorrhagic infiltration all through the cord, and the dorsal, lumbar and sacral regions presented a similar condition. This was not a case of cerebro-spinal meningitis.

6. Since building big tunnels in New York very many cases of caisson disease have developed. Dr. Starr showed a specimen of the spinal cord from a patient who died suddenly after coming out from a caisson. The rapid change from the atmospheric pressure of four or five atmospheres, to the ordinary atmosphere is accompanied by the evolution of gas in the blood vessels, apparently the same effect both in the blood and in the tissues generally that is seen in champagne when it is uncorked, there is a sudden evolution of gas. This was the condition that occurred in this man's spinal cord, practically blowing up his spinal cord and disintegrating it absolutely. The periphery of the cord was somewhat preserved. The blood vessels of the brain were filled with bubbles of air.

7. Dr. Starr presented interesting observations on brain cases. The first was a condition he had never seen described in the books or pictured, one that had been found by Dr. Larkin a number of times in post-mortem examinations of patients who have died in the Bellevue Hospital in the alcoholic wards and have died apparently from alcoholism. It is an infiltration beneath the pia mater of blood in small amounts without any rupture of any visible blood vessel, where there seems to be a diapedesis of the red blood corpuscles, not a hemorrhage in any sense of the word. If the pia is picked off no clot is found under it; the pia is simply infiltrated everywhere with blood.

8. Another interesting case showed a hemorrhage into one of the lateral ventricles, but the interesting feature of this case is that no rupture of any blood vessel could be found. It seems to have been a gradual infiltration of blood into the ventricle secondary to a condition of leukocythemia. The patient had a gradually increasing hemorrhage, but there was no visible rupture of any large vessel to be found; the patient went gradually into a state of coma and died. Careful examination of the vessels was made.

9. This was a case of abscess of the temporal lobe subsequent to ear disease, showing that the caries of the petrous portion of the temporal bone may give rise to a pretty extensive abscess. The patient was operated on for mastoid disease and subsequently died.

10. Here was an abscess of the frontal lobe of the brain subsequent to operation upon the nose.

11. Here was a rather extensive tumor of the middle lobe of the cerebellum, with a cyst in the center, that was diagnosticated, and no attempt was made to operate, as the patient's condition when sent to the hospital did not warrant any attempt at operation.

12. This specimen was shown to confirm a statement that Dr. Spiller made not very long ago, and which coincides with Dr. Starr's experience—that very extensive hemorrhages in the brain may occur without causing sudden death. There has been some discussion as to the duration of life after extensive hemorrhage in the brain. Here is a hemorrhage which involved nearly half of the left hemisphere of the brain, occurring just above the level of the basal ganglia near to the corpus callosum and the patient lived three and one-half days after the onset of the disease.

13. At autopsy we do not often find cases of gumma that are as extensive as this one. Dr. Starr thought it might be interesting to see the gummy tumor that has covered the whole half of this brain cortex. The gummy tumor could easily have been stripped up and taken off at an operation, though it would have to be pretty extensive, exposing one-half of the brain; a flat thick deposit. It is an illustration of the fact that it would be pretty difficult to absorb as large a lesion as that by mercurial inunctions and iodide of potassium. Dr. Starr thought perhaps we are making mistakes, now that the methods of brain surgery have become so accurate and success is attendant upon the attempts to operate in the hands of quite a number of distinguished surgeons, to wait in many of these cases for medical treatment to remove the growth when we know that the probability is that it is a gumma. He thought that unless very marked improvement occurs in the course of two months it would be perfectly legitimate to remove a gumma just as we would remove any other tumor of the brain.

14. This last picture was one which interested Dr. Starr exceedingly. A recent author in *Brain* has made a collection of 255 cases of aneurism of the vessels of the brain. It has not been Dr. Starr's fortune to see many cases of aneurism of the brain. He had seen two in the Presbyterian Hospital, one with very loud murmurs. Here is a large aneurism of the basilar artery, an enormous aneurism pressing upon the base of the brain, upon the medulla oblongata, and one would have supposed that it would have involved some of its nerves. The interesting feature of the case is its history. The patient from whom the brain was removed was organist in one of the large churches, 45 years of age, a man who was known to the vestrymen as being in very good health. He never failed at the rehearsals or services and last Easter Sunday presided at the organ and gave an elaborate musical service, but came out after the musical service and dropped dead on the street and was taken to the morgue. An enormous aneurism of the basilar artery was found, although the man presented absolutely no symptoms during life.

15. Here was a case of cystic tumor of the brain involving just the area of the pituitary body, a tumor of good size, that is round and appears to press upon the optic chiasm. It must be a cyst of embryonal character, because of its peculiar characteristics. The patient was a longshoreman, was in perfect health and did his work in loading and unloading the White Star steamers. One day he sat down on the edge of the dock to take his luncheon and his associates did not miss him that afternoon. Two days later he was found sitting there dead by a policeman.

Dr. E. W. Taylor said he was a little surprised to hear Dr. Starr repeat the statement that multiple sclerosis was so rare a disease. Several years ago the whole matter was gone over at a meeting of the New York Neurological Society, and at that time varying opinions were expressed with the general result that the disease was shown to be less frequent in

this country than, for example, in Edinburgh and on the Continent. In Boston, since attention has been more definitely directed to a search for the disease, the diagnosis has certainly been more frequently made. Statistics from Strümpell's clinic have shown that multiple sclerosis is as common a disease as tabes, but this cannot be regarded as the experience in America. Dr. Taylor had had post-mortem examinations in six or eight cases, in several of which the diagnosis was extremely obscure ante-mortem. He thought it was one of the relatively common structural nervous lesions in this country as it appears to be abroad.

Dr. G. L. Walton said he was particularly interested in the cases of acute infectious myelitis. He has recently seen a case in which this seemed the probable diagnosis. It was that of a young man who was operated on for appendicitis, during the acute stage. In the course of the day of operation and the following day, and coincidently with an endocarditis, a motor and sensory paralysis pointing to a complete lesion of the cord in the lower dorsal region occurred. Dr. Courtney told Dr. Walton he had seen two cases the past winter, following typhoid, with similar symptomatology.

Dr. Spiller said he was sorry that he must differ with Dr. Taylor, for whose opinion he had much respect, regarding the frequency of multiple sclerosis in America. Dr. Taylor, by his own admission, had seen only six or seven cases in many years; and in consideration of his experience with pathological material this was not a large number. Dr. Spiller believed he was one of the first to call attention to the infrequency of multiple sclerosis in America when he spoke of it in the *Polyclinic* about eleven or twelve years ago.

Multiple sclerosis is common abroad; it seemed to him to be as common as tabes there. In the Laboratory of Neuro-Pathology of the University of Pennsylvania there are between 450 and 500 specimens of nervous disease. He has had in that collection about five cases of multiple sclerosis. If it were such a common disease in this country we should have our mistakes corrected at the necropsy table, but in the great pathological material from the Philadelphia General Hospital, multiple sclerosis is rarely seen.

Dr. Spiller thought all of Dr. Starr's specimens were interesting and that it was difficult to select any one for discussion. The most interesting one to him was that of caisson disease. He could not recall having seen a specimen from the cord in a case of caisson disease. He had seen many cases of myelitis. He was much interested in the hemorrhage in the lateral ventricle, because it was confined apparently to a small portion of the ventricle. Within the last week an interesting case came under Dr. Spiller's observation. A man had certain symptoms of tumor at the base of the brain, and his condition was such as not to justify any operation in this region. He died and a large thrombus was found. It was well defined, sausage-shape, and was in the posterior part of the cavernous sinus and inferior petrosal sinus. The man had lived probably for a year with this lesion.

Dr. Starr's experience and Dr. Spiller's agree in that a person may live a long time, perhaps days, or at least many hours, when hemorrhage fills all the ventricles of the brain. He was particularly interested in Dr. Starr's remarks regarding infiltrating hemorrhage of the basal pia without rupture of vessels. He had seen this condition and had thought it might be a post-mortem change. When the head of a cadaver is allowed to hang down for a time the face may become very blue. It is quite possible

that where there is such congestion the infiltration of the pia may occur. Dr. Spiller said that he recently had requested Dr. Martin to operate on a gumma of the brain cortex, and a portion had been removed, but that these cases are not very favorable for operation, as the growth is infiltrative. An aneurism such as Dr. Starr showed is very rare. Dr. Spiller remembered a case he saw in consultation with Dr. Posey a number of years ago. A woman in middle life had a lesion of the chiasm; she died suddenly, and it was found that she had an aneurism at the chiasm.

Dr. J. J. Putnam said, in regard to gumma of the brain, that it had always seemed to him reasonable to operate in such cases if only for the sake of securing better conditions of the circulation, and thus giving a better chance for the iodides and mercury. He had recently seen an interesting case of aneurism of the extreme anterior end of the basilar artery at the point of the junction of the two posterior cerebrals. The symptoms were slight mental failure, general forgetfulness, and staggering gait. A decompression operation was done, which proved of no service. After a week the patient died quite suddenly and then the condition above described was found, associated with a moderate distension of the ventricles.

Dr. Philip Coombs Knapp said he was rather inclined to agree with Dr. Starr, rather than with Dr. Taylor, in regard to multiple sclerosis. It is certainly a diagnosis which he has had occasion to make only rarely and in some of the cases both in private practice and in the hospital, he did not feel that he could defend the diagnosis very strongly. This last winter he had seen only two well defined cases, and it seemed to him that that was an unusual number to see in a year. It was one of the examples of two rare things coming together, but they were both typical cases. It had not seemed to him that acute infectious myelitis is quite so rare as Dr. Starr seems to think. Certainly he had had occasion several times to make that diagnosis, and he thought that greater emphasis should be laid on the fact that the prognosis is not always hopeless. He saw a man only a few weeks ago who gave a very typical history of acute myelitis of the infectious type coming on in connection with one of the infectious diseases. The man was intelligent and presented symptoms typical of acute myelitis, complete paraplegia with loss of sensation, with involvement of the bladder and rectum, etc., and yet when he came to the hospital there was nothing to be found that would indicate any myelitis. He had recovered completely with the exception of a slight weakness in the legs. The hemorrhagic condition at the base of the brain, which Dr. Starr put upon the screen, reminded Dr. Knapp very forcibly of a case which he saw this winter and which the pathologists told him had occurred once or twice before that year at the hospital, not, however, in close connection with alcoholism. It was a case of hemorrhage into the pia, which very closely resembled the picture which Dr. Starr had upon the screen, but resulting from an injury to the head and a slight hemorrhage arising in the fissure of Sylvius, not a large hemorrhage into the fissure of the Sylvius itself, but extensive hemorrhage infiltrating into the pia. He found the whole of the hemorrhage disappeared on removing the pia.

*(To be continued.)*

## NEW YORK NEUROLOGICAL SOCIETY

JOINT MEETING OF THE NEW YORK NEUROLOGICAL SOCIETY AND SECTION ON  
PEDIATRICS OF THE NEW YORK ACADEMY OF MEDICINE

MAY 4, 1909

The President, Dr. J. RAMSAY HUNT, in the Chair

REPORT OF THE COLLECTIVE INVESTIGATION COMMITTEE  
OF THE NEW YORK NEUROLOGICAL SOCIETY, WITH THE  
COÖPERATION OF THE COMMITTEE APPOINTED BY  
THE SECTION ON PEDIATRICS OF THE NEW YORK  
ACADEMY OF MEDICINE, AND OF THE NEW YORK  
BOARD OF HEALTH, ON THE POLIOMYELITIS  
EPIDEMIC OF 1907

The President, Dr. Hunt, in introducing the subject, said that this report embodied the results of a statistical study of the poliomyelitis epidemic which occurred in New York City in the summer of 1907. It was estimated that there were over 2,000 cases, which was the largest epidemic of this disease that had been recorded. Reports were received of about 750 cases, which had been carefully studied and analyzed with the view to enlarging our conception of this disease.

The Collective Investigation Committee of the New York Neurological Society was appointed by the President, Dr. Charles L. Dana, at the regular meeting of the Society on October 8, 1907. A similar committee, appointed by the Section on Pediatrics of the New York Academy of Medicine, was invited to coöperate in this work. Also, Dr. Bolduan, of the New York City Board of Health. Dr. Simon Flexner, of the Rockefeller Institute, and Dr. Henry Ling Taylor, of the Section on Orthopedics of the New York Academy of Medicine, were invited to become members of the committee.

For convenience of presentation, the Report has been divided as follows: (a) Organizations and aims of investigation. (b) Epidemiology. (c) Early stages of the disease. (d) General symptomatology. (e) Pathology. (f) Types of the disease and prognosis. (g) Therapeutics.

Dr. Hunt also announced that Dr. Robert W. Lovett, of Boston, who had made a special study of the occurrence of poliomyelitis in the State of Massachusetts, during the years 1907 and 1908, would take part in the discussion and present the results of his investigations.

*Methods and Aims of the Inquiry.*—Dr. B. Sachs, the chairman of the committee appointed by the New York Neurological Society, said that this could only be regarded as a preliminary report of the work done by the committee. The poliomyelitis epidemic of 1907, in Greater New York, was the first to occur in any one of the large American cities, and if we realized that the population of Greater New York was equal to that of the entire state of Massachusetts, we might say that it was the first epidemic to occur in a most densely populated district. So far as the committee were able to estimate the extent of the epidemic, it was more than likely that at least 2,000 cases of the disease occurred in New York and its vicinity during the summer and autumn of 1907. The first step taken by the committee was to send 4,000 return postals to the physicians of Greater New York

and the vicinity, inquiring whether or not the physician in question had seen any cases of infantile paralysis during the summer and autumn of 1907. To these inquiries they received 1,100 answers; 470 physicians reported that they had seen cases of infantile paralysis. About 1,250 inquiry blanks were sent to these physicians and to the hospitals and dispensaries of Greater New York. These blanks, one for each case, contained questions that were thought necessary to ask in order to bring out corroboration of facts which were well known regarding poliomyelitis, and others which might be possibly new to prove the etiology, the mode of onset, the epidemiology and the general course of the disease. The committee was fully aware that its work would be defective in many respects, yet it had reason to think that its labors had not been altogether in vain. It was evident that epidemic poliomyelitis differed greatly from the old-time conception of infantile spinal paralysis; that it was an infectious and not contagious disease, which might involve the lower portion of the brain axis, as well as the spinal cord; that it behaved like other acute infectious diseases of childhood; that in some instances the general symptoms of infection were as prominent as were the symptoms of paralysis; that it was, on the one hand, a more fatal disease than was supposed, and, on the other hand, that recoveries were more common than was suspected; that meningeal symptoms were unusually common in the earlier stages of the disease, but that there were very few cases which would lend support to Strümpell's contention that there was a polioencephalitis closely allied to poliomyelitis. Among other things, more light would be thrown on the question of the relation of poliomyelitis to acute ascending paralysis and to multiple neuritis.

*Epidemiology.*—Dr. Charles F. Bolduan of the New York City Department of Health discussed this phase of the subject and offered the following conclusions: The 1907 epidemic centered in New York City, where some 1,500 cases of the disease occurred. The epidemic spread radially along ordinary routes of travel, and appeared in Boston and other points in Massachusetts. In New York City an unusual proportion of cases occurred on the East Side of Manhattan Borough. The reason for this was not known. It was impossible to discover any nativity susceptibility in the cases reported. The very few (2 out of 750) cases among negroes was remarkable. An unusually large proportion of cases occurred in young children. In the city the epidemic began in June and reached its height in September. The onsets of the country cases were generally somewhat later, and the proportion developing in September greater than in the city cases. The disease was moderately communicable; about as much as epidemic cerebro-spinal meningitis. The path of infection was not known. The disease was distinctly less virulent in the New York epidemic than in other epidemics. This was shown by the low mortality and by the small number of adults affected. The data on the probable average incubation period was too meager to permit of definite conclusions, though the evidence indicated an average incubation of less than ten days.

Referring to cases of multiple infection, Dr. Bolduan said their statistics showed that there were 700 houses in which a single case occurred; there were eleven houses in which two cases were reported and three in which three cases were reported. There was no instance in which four or more cases had occurred in the same house, although such observations, made by others, were on record.

As to age distribution, 62 cases occurred in children under a year old;

221 cases between the ages of one and two years; 180 cases between the ages of two and three; 106 cases between the ages of three and four; 63 cases between the ages of four and five; 28 cases between the ages of five and six; 11 cases between the ages of seven and eight; 11 cases between the ages of eight and nine; 7 cases between the ages of nine and ten; 14 cases between the ages of ten and fifteen; 5 cases between the ages of fifteen and twenty; one case between the ages of twenty and twenty-five; one case between the ages of twenty-five and thirty. There were no cases reported over the age of thirty years, and the youngest case occurred in a child of two weeks.

*Onset and Early Symptoms of the Disease.*—Dr. L. E. La Fetra said that various writers had laid much stress on the presence of diarrhea in cases of anterior poliomyelitis. The series of cases collected by this committee seemed to show that it had no causative influence, and constipation was present as often as diarrhea in those cases in which the condition of the bowels was recorded. When one considered that the epidemic occurred mostly during the time when diarrhea in infants was most prevalent, it was not at all surprising that of these cases about one-seventh had diarrhea. Sore throat was present 45 times, a number which did not seem to be significant. If coryza, bronchitis and sore throat were added together, they gave a total of 84 cases, and even that number would not warrant any conclusion in regard to the port of infection. Only 21 cases had a distinct picture of gastroenteric infection either two weeks preceding or as a prodromal condition. Pneumonia and bronchitis were present 26 times. Other diseases might be regarded as simply concomitant. There were 121 cases in which the infant was entirely breast-fed, while 125 were bottle-fed. The number of infants under two years was 283, and 42 per cent of these were nursing infants. This would seem to eliminate food infection as a factor in the production of the disease. Exposure to heat was not a marked factor, considering that the epidemic was in summer. The greatest number of cases occurred in the month of September, next in August and next in July. It was definitely said that there were absolutely no prodromata in 20 cases, and there were many others in which no prodromata were recorded. Of the symptoms mentioned, irritability and restlessness, pain in the spine and extremities, and apathy were emphasized. Suppression of urine was the first symptom in one case, lasting for three days. During the first three days of the disease fever was nearly always present, being definitely absent in only 61 cases. The range of temperature was from 100 to 106, in the majority of cases ranging from 101 to 104. The duration of the fever was usually two or three days, but it lasted over seven days in 111 cases. Vomiting was present at the onset in almost 25 per cent. of the cases. This was usually of short duration. A chill was definitely present in 61 cases. Among the nervous symptoms of onset, restlessness was the most common, occurring in 369 cases. The next most frequent was headache, 162 cases. Delirium supervened upon the restlessness in 62 cases; convulsions in 51 cases; twitchings in eight cases. Apathy was present in 204 cases; stupor in 71. Rigidity of the neck was present in 121 cases. These cases might well be placed in Wickman's category of the meningeal type, and had an onset closely resembling cerebro-spinal meningitis. Dysphagia was present in 19 cases, which might indicate that there were instances of bulbar involvement. There were 14 cases in which the respiration was changed in character, being slow in three cases, irregular in seven and "altered" in four. Al-

most all the cases had pain and tenderness during the first few days. In practically one-half the cases it was quite marked, and in many instances it was excruciating. It occurred most often in the lower extremities, next in frequency in the spine and trunk, and still less in the upper extremities and neck. Skin eruptions occurred in 61 cases. The form of eruption which was most common was papular, and it was particularly mentioned in many instances that the eruption covered the entire body. Perhaps this eruption may have some significance, since it was not apt to be mistaken for anything else. Wickman stated that in his study of the disease an eruption was seen in only one case.

*Symptomatology of Epidemic Poliomyelitis* was discussed by Dr. L. Pierce Clark.

The speaker said the rapidity with which the nerves became affected in poliomyelitis might be seen in that in more than a quarter of the cases paralysis was noted at the onset of the affection or during the first day. The urgency of immediate treatment was further emphasized by the fact that in more than 90 per cent. of the cases paralysis was well advanced in degree before the third day, but was general in but one-fifth of the cases reported. Four-fifths of all the cases began with paralysis in one or both legs, showing a preponderance of lumbar involvement in this disorder. The left leg was involved at least one-third more frequently than the right, which was probably to be explained on anatomic and physiologic grounds. In 2 per cent. of the cases the face and neck were first involved. The rapidity with which the paralysis became complete in 36 carefully noted cases showed that the infection of the nervous elements was almost simultaneous. Poliomyelitis had been so long regarded as a type of spinal disorder attended by a flaccid palsy that it might cause some surprise to note that the paralyzed parts were first rigid instead of flaccid in 38 cases of 632 reported. It was probable that the meningitic inflammation or irritation would fully explain this phenomenon. The face was involved in 27 cases at the worst period of the disease. In two unique cases, both sides of the face were involved. Deglutition was affected in 18 cases, speech was altered in 28 cases, and there was a squint in some 26 cases, showing a fairly extensive lesion in the cranial nerves in this epidemic. Abdominal paralysis was noted only 46 times, or 6.1 per cent., while respiration was wholly abdominal in 19 cases, or 2.5 per cent. In seven cases no paralysis at all was recorded, a form of poliomyelitis without palsy. In one case where all four extremities were involved, the left half of the abdomen and left thorax were distinctly involved. The left side of the body was more frequently affected than the right. This was true not only of the individual paralyses, but also in the various combinations as well. The bladder was affected only 87 times, and the rectum 52. This was rather surprising in view of the fact that both legs alone were affected 168 times, and was probably to be accounted for by the age of the patient, presenting difficulty of correct observation. A rather characteristic feature of the epidemic was the great frequency with which some form of pain attended the disease, notably in the early stages. Among the vaso-motor symptoms the usual changes had been noted. Swelling occurred in 29, or 5 per cent. of the cases. The knee-jerk, one or both, was absent in 344 cases, which was too small a number if we took into account the small number of upper extremity cases. Kernig's sign was present in but 17 of the cases tested,



while a bilateral Babinski was found in 14, and a unilateral in 19 cases. Improvement was noted in 357 cases: in 137 this occurred within the first month; in 101 within the second month and in 119 within the third month or later. In only 28 cases was there no recovery, and six cases were fatal. In two of these fatal cases death was due to an intercurrent disease, and in only four could death be attributed solely to the disease itself. Complete recovery was said to have taken place in 40 out of the 752 cases (5.3 per cent.) and almost complete recovery in 13 cases (1.8 per cent.), thus making a most satisfactory recovery in 7.1 per cent. of all the cases. Some form of paralysis remained in 645 out of the 752 cases (86 per cent.). In the remaining 7 per cent. the condition was not properly accounted for. Only very few cerebral palsies were observed, thus showing that in the epidemic form, at least, there was very little to uphold the supposed common relationship between paralytic polio-encephalitis and poliomyelitis, a theory of Strümpell's.

*Pathology.*—Dr. I. Strauss said he had already covered this phase of the subject in a paper read before the January (1909) meeting of the Society. The material upon which that paper was based was obtained from the autopsy findings in six fatal cases of poliomyelitis acuta occurring during the epidemic of 1907. Five of the cases were seen in the service of Dr. Henry Koplik, and the other was a private case in the practice of Dr. H. Schwarz. Two of them were autopsied 24 hours after death; one four hours after death, and the others from four to six hours after death. In one of the cases death had occurred within twenty minutes after the onset of the paralytic symptoms. The oldest of the cases was a child of nine years; the others ranged in age from eighteen months up. As the result of his observations, Dr. Strauss offered the following conclusions:

1. That in poliomyelitis acuta there were both interstitial and parenchymatous lesions, but that the interstitial were of fundamental importance and the latter secondary.
2. That the ganglion cells were affected only when in contact with the interstitial process.
3. That the interstitial process was dependent upon the vessels for its character and localization.
4. That the lesion, while generally most marked in the anterior horns, was not confined to that portion of the gray matter, and hence the word "anterior" should not be used to designate the condition.
5. That the white matter of the cord was the seat of inflammatory changes was of minor importance.
6. That the pial infiltration was the essential element in the disease, and might be the origin of the infective agent.
7. That the involvement of the medulla, pons and basal ganglia always occurred in the fatal cases, though clinical experience in the last epidemic had shown that such involvement did not mean a fatal issue necessarily.
8. That in striking contrast to the cord, the ganglion cells in the medulla, pons and basal ganglia, even when near infiltrated zones, escaped serious alteration.
9. That the brain cortex may show evidences of vascular irritation and sometimes infiltration.
10. That the edema which is present plays an important role in explaining the transitory nature of the symptoms in the non-fatal cases.

11. That the predominating role ascribed to the central artery by previous observers was unjustifiable.

12. That there was no evidence of thrombosis.

13. That apparently the infective agent may affect any part of the brain stem in its initial lesion.

14. That it could not be determined from a study of the pathological histology whether the infection had a hematogenous or lymphogenous origin.

15. That while the central nervous system was the seat of the principal lesion in poliomyelitis acuta, changes in the internal organs of the body pointed to a general infection.

16. That the acute inflammation of the lymph apparatus connected with the interstitial tract might indicate the path of entrance of the infective agent.

*Therapeutics.*—Dr. Henry Ling Taylor said that in studying the reports of the treatment of epidemic poliomyelitis, his sub-committee had endeavored to distinguish between the treatment of the attack and the treatment of the sequelæ. This had been difficult, owing to the incomplete data furnished, and to the failure in most instances to specify at what stage of the disease the treatment was applied.

During the attack, heat in the form of baths, packs, fomentations or poultices was applied 33 times; counter irritation to the spine by mustard, capsicum, camphorated oil, guaiacol or cautery was employed 29 times, and the mustard foot bath or pack three times. Ice was applied to the head seven times and to the back five times. Cathartics, eliminatives or colon irrigation was used 22 times, and niter or acetate of ammonia five times. Antipyretics were given 34 times, and the salicylates, including aspirin, eleven times. Strychnia, nux vomica or tonics was given 24 times; ergot, nine times; guaiacol or creasotol, four times, and tincture of aconite, three times. Sedatives were given eight times. Antitoxin, lumbar puncture, unguentum Credé, and immobilization were reported once each. Rest was reported in 418 cases, and was indeed necessitated for a longer or shorter period by the patient's disability. A generous diet, fresh air and hygienic care were specified in a considerable number of cases. For the sequelæ the usual treatment had been massage (508 cases), and electricity (420 cases). It was specified that 37 received galvanism, and 35 faradism. In 32 cases cold dips were given. The use of splints was recorded in 18 cases, though a much larger number must have been treated in this manner.

As the results of the statistical study of the treatment in the epidemic of 1907 were so meagre, it was felt that some general expression of the personal opinion of the committee should be recorded. As no specific for the toxemia was known, and there was no known procedure to limit the damage to the cord, the treatment of the active stage was therefore symptomatic and based on general principles. Briefly summed up, the emphasis in the management of these cases should be laid on:

1. Rest in bed during and soon after the attack.
2. Early splinting, to prevent muscle stretching and deformity.
3. In treatment of the sequelæ, vibration, massage and other means to promote local circulation and nutrition.
4. Voluntary and passive movements, especially of the weaker muscle groups, to favor muscle balance and educate the centers.
5. Portative apparatus adjusted to the needs of the individual to facilitate locomotion, which was of itself an invaluable stimulus.

6. Correction of fixed deformities by surgical and orthopedic treatment.

*Types of the Disease and Prognosis.*—Dr. H. Schwarz discussed this phase of the subject. He said that from the reports sent in by the various physicians of the city it was impossible to get any idea of the types of cases, and of their prognosis. Yet it was thought by the chairman and other members of the committee to be a good idea to give in brief some examples of the various varieties of poliomyelitis encephalitis which had come to their notice. In doing this Vickman's classification would be followed. The speaker then reported in detail a number of unusual cases of the disease that had been reported to the committee during the recent epidemic, beginning with the mildest or abortive forms. That these existed, there was very little doubt. Why we did not see more in New York, Vickman having described 150 odd cases, it was difficult to say. Very probably our control of the various family histories and the knowledge of the other members of the family were less intimate than in Sweden. In Vickman's cases they were often closely associated with typical cases of poliomyelitis in the same family. The symptoms of these cases were identical with those described by Dr. La Fetra as symptoms of the first two weeks, or of the onset. They had the temperature elevation, rigidity of the neck, stupor, apathy or extreme restlessness and hyperesthesia. One did not know whether they were going on to paralysis or not. The second type of the disease referred to by Dr. Schwarz was the ordinary spinal type, running a typical course, and he reported some cases illustrating the wide ranges of the paralysis occurring in this type, and the prognosis. Vickman had drawn attention to the fact, and it had also been noticed here, that when all four extremities were involved it is not likely that the abdomen and chest muscles would escape. The next type referred to was the pontile or bulbar form. This is rarely one which was restricted to the pons alone; usually the spinal cord was also involved. Another type was that in which there was ascending or descending paralysis, with the clinical picture of Landry's paralysis. Still another was the cerebral or encephalitic form, and it was curious to note that in this epidemic, so far as was known, no member of the committee in his personal experience had encountered an example of this type. Other types mentioned and illustrated by Dr. Schwarz were the ataxic or multiple neuritis type with ataxia; the meningitic, which were cases in which the meningitic symptoms predominated, and those cases resembling multiple neuritis.

(To be continued)

# Periscope

## Archiv für Psychiatrie und Nervenkrankheiten

(Band 45, 1909. Heft 1)

1. Osteomalacia and Dementia Præcox. JOH. HABERKANT.
2. The Histopathology of Tubercular Meningitis. K. GEHRY.
3. The Pathological Development of the Nervous System. O. VON LEONOWA-VON LANGE.
4. Blood Pressure in Alcoholics. W. HOLZMANN.
5. The Infiltration of Cerebral Vessels in Progressive Paralysis. S. WEISS.
6. Oxidation Processes in the Organism of the Insane and the Toxicity of the Urine. A. J. JUSCHTSCHENKO.
7. Increased Reflex Irritability and Nervousness. W. PLÖNIES.
8. Catatonia in Children. RAECKE.
9. Contributions to the Pathological Anatomy of the Psychoses. R. MORIYASU.
10. Contribution to the Knowledge of Brain Tumors. GLASOW.
11. The Prognosis of Dementia Præcox. E. MEYER.
12. Remarks on Aphasia in connection with Moutier's "L'aphasie de Broca." KURT GOLDSTEIN.

1. *Osteomalacia and Dementia Præcox.*—Haberkant draws attention in this article to the relation between osteomalacia and mental disturbance in general with particular reference to dementia præcox. It is a careful clinical and historical study of a much disputed question. A collection of thirty-four cases of true osteomalacia in psychoses leads to the conclusion that a certain type of mental disorder is characteristic of all cases. Apart from congenital mental defects dementia præcox appears as the most frequent psychosis. In this classification conditions previously described as paranoia with consecutive dementia are included. The ultimate conclusion is reached that although the association of osteomalacia and dementia præcox is relatively unusual it cannot be regarded as a coincidence.

2. *Histopathology of Tubercular Meningitis.*—In this paper a most detailed description of the pathological findings in one case of tuberculous meningitis is given. Some of the more important conclusions from this study are as follows: The pia reacts to the stimulus of the miliary tubercle through increase of connective tissue and changes in blood vessels. They are infiltrated with lymphocytes, plasma cells and with other large cells rich in protoplasm analogous to epithelioid cells. The blood vessels of the cortex show similar changes to those found in progressive paralysis. The ganglion cells are not markedly diminished. Some are apparently destroyed and others show partial to total chromatolysis. The neuroglia shows progressive changes. Some of the glia cells are increased in size and in general the neuroglia shows characteristic proliferative tendencies. A characteristic feature of the entire process is the close association of

the foregoing changes with the tubercles. In regions where the tubercles do not occur the tissue shows normal conditions.

3. *Pathological Development of the Nervous System.*—On the basis of a microscopic study of the cortex of the calcarine sulcus in a case of congenital bilateral microphthalmia, the author discusses certain anatomical and physiological peculiarities of the occipital cortex and also presents certain philosophical considerations of a general sort. He finds that the chief difference between the normal and pathological calcarine cortex in the case under investigation consists in a reduction in number and size of the nerve cells, particularly noticeable is the loss of cells in the fourth layer. In a previous paper the author divided the calcarine region into seven distinct layers.

4. *Blood Pressure in Alcoholics.*—Holzmann makes a careful study of the question of alterations of blood pressure under different pathological conditions, with particular reference to alcoholics. The details of methods and statistics are not possible to give in the scope of a brief review. The general conclusions of the research are in part as follows: The effect of alcohol is in general to reduce the blood supply to the tissues through a sinking of the systolic pressure and elevation of the diastolic pressure; also a reduction of pulse pressure, together with an increase of the pulse frequency. The body temperature is reduced and there is a slowing of the general blood current.

5. *Infiltration of Cerebral Vessels.*—Weiss reaches the following conclusions regarding the infiltration of the blood vessels of the brain in progressive paralysis: The cellular infiltration of the brain vessels is greater in the cortex than in the white matter. In the cortex it is most marked in the middle layers. In the majority of cases the central and frontal convolutions show the most infiltration, the occipital convolutions the least. No relationship can be shown between the extent and distribution of the infiltration and the duration of the disease process. There is perhaps a certain connection between the attacks clinically observed and the vessel infiltration revealed post mortem. In addition to the cellular infiltration, pigment is formed, which is lacking only when the collections of cells are very slight. Pigmentation occurs oftener in chronic cases, but bears no relation to the paralytic attacks.

6. *Oxidation Processes in the Organism of the Insane.*—In this paper Juschtschenko offers a study of the process of oxidation in the insane on the basis of a study of about twenty cases. This paper is in part the result of work begun in 1903, with methods of determining oxidation processes in living organisms. The investigation is essentially chemical and does not permit of review. In general the author is of the opinion that chemical biological investigations undoubtedly are both the most interesting and the most fruitful methods of studying the processes which take place in the organisms of the insane. In this connection the methods of studying the urine devised by Nencki and Siever, which the writer has also used, are considered the most useful toward an understanding of the processes underlying mental change. The hope is expressed that a scientific classification of mental disease may finally be obtained on a physical and chemical basis.

7. *Increased Reflex Irritability.*—Plönies discusses exaggerated reflex irritability and nervousness in their etiological relationship to functional disturbances and the irritative phenomena of stomach lesions with reference to the influence of anemia and reduced nutrition. The subject is

treated at great length and is valuable as demonstrating the unquestioned relationship between certain structural lesions and general nervous irritability. The practical outcome of the paper is an insistence upon prophylactic measures in the young in order to obviate the nervousness of the later years.

8. *Catatonia in Children*.—As a result of a study of catatonia in childhood, Raecke reaches the following general conclusions: That catatonia occurs in childhood, particularly between the twelfth and fifteenth year, and is similar in its manifestations to that occurring in adults. That as a rule a congenital predisposition may be shown upon which the psychosis develops while external conditions play no significant part. That many so called imbeciles with catatonic symptoms may in their childhood have undergone an attack of catatonia and thereby derived in part or wholly their mental weakness, and that the existence of a basis of imbecility has no noticeable influence on the clinical picture or on the prognosis.

9. *Pathological Anatomy of the Psychoses*.—Moriyasu returns to the question of the pathological anatomy of the psychoses and has made a careful microscopic study of a number of cases of senile dementia and of delirium tremens, but rather too few upon which to base general conclusions. From his investigation he has observed the following histological changes in senile dementia: A reduction in the number of neurofibrils in all regions of the cortex; a special involvement of the thicker fibers; retention of the external form of ganglion cells, but destruction of intracellular fibrils; in general the changes are less marked than in senile dementia. The study of delirium tremens showed a slight extracellular disappearance of fibrils, but without marked alteration of the ganglion cells themselves. Blood pigment was found in the interstitial tissue and in the vessel walls.

10. *Brain Tumors*.—Glasow narrates five cases of brain tumor and compares the symptoms observed with those given by other observers.

11. *Prognosis of Dementia Præcox*.—Meyer concludes that the prognosis of dementia præcox is serious, but by no means absolutely unfavorable. In a considerable portion of cases, according to his experience one-fifth to one-fourth of the catatonia group and over one-sixth of the entire number of cases may recover for years.

12. *L'aphasia de Broca*.—Goldstein in a paper without cases discusses the newer points of view regarding aphasia with particular reference to the recent French work on the subject. In regard to the relationship between dementia and aphasia, he believes the French school as represented by Marie and Moutier has gone too far in its identification of the two conditions. He is strongly of the opinion and in this presumably will have the support of most observers that the type of intellectual defect observed in aphasia is not to be confused with true dementia, that aphasia does not pass over into a general intellectual disturbance. The intellectual defects which do occur are of an absolutely peculiar character, to a study of which future investigations of aphasia must be chiefly directed. By this means it may be possible to arrive at a knowledge of psychical processes and a determination of their localization.

## Journal de Neurologie

(Vol. XIII, No. 18)

*The Electrotherapy of Arteriosclerosis.* O. LIBOTTE.

A consideration of the pathogeny of arteriosclerosis, with a plea for the use as a palliative in this disease, of the faradic and high frequency currents, with which the author claims to have obtained remarkable improvement in some cases. He thinks that . . . (1) High frequency is the treatment for the initial stages. (2) High frequency is, however, insufficient in the principal cardiac, aortic, renal and cephalic determinations of the disease, and in severe lesions of the peripheral arteries. (3) In the treatment of these latter conditions cutaneous faradization, using the secondary coil having a large number of turns of very fine wire, is the method of choice. Its action he thinks is due to a vaso-dilatation lowering arterial tension.

(Vol. XIII, Nos. 19 and 20)

*The Psychology of the Mentally Abnormal, and Their Education in Belgium.* DUPUREUX.

A consideration of the educational needs of this class, and the proper arrangements for supplying them. Their education should, he thinks, be based upon a study of their psychology, and should be conducted along the following lines: (a) The education of the abnormal should commence in the infant asylum. (b) Special instruction should be given in special schools, not in classes added to ordinary schools. It should comprise: (1) One or several observation classes in each school. (2) Different primary grades with such modifications as are needed. (3) Music and gymnastics should form a principal branch. (4) There should be manual training. (5) The schools should be mixed if practicable. (c) A psychological laboratory in charge of a specialist physician should be attached to each school and this physician should aid the staff in their work. (d) There should be added to normal schools a department preparing teachers for work among the abnormal. (e) The establishment of boarding schools for the abnormal is very necessary to ensure early and thorough training for such as cannot receive proper care at home. (f) The housekeeping and care of these schools can best be confided to women, preferably married. (g) They should be situated, when possible, in the country, near the large cities. (h) In connection with these schools there should be established agencies for finding positions for those who have finished their courses of training, and these agencies should organize means of keeping the former pupils in touch with their alma mater. (i) Schools of this sort are needed everywhere and at once. He closes with a short description of the Ghent Communal School.

(Vol. XIII, No. 23)

*The Influence of Menstruation upon the Frequency of Epileptic Attacks.*

C. PARHON and C. I. URECHIA.

There is a general impression that in female epileptics the seizures are more frequent around the time of menstruation, though in a few instances the opposite has been found to be the case. The authors suggest that this increased frequency may be due to a disturbance in the

calcium metabolism, in the sense of increased elimination at this time, quoting from the literature in support of this view, but giving no new facts.

(Vol. XIII, No. 24)

*Spasmodic Paralysis of the Right Lower Extremity and Sensory Disturbances in the Lumbo-Abdominal Region of the Same Side Consecutive to a Fall Upon the Pelvis.* BOUCHAUD.

Report of a case showing symptoms of this character after a fall upon the right side of the buttocks, with some discussion as to the probable spinal localization of the lesion causing the trouble. A lesion affecting at the same time the pyramidal tract, the posterior horn and the nerve roots upon the same side, the author thinks would explain the symptoms.

C. L. ALLEN (Los Angeles).

### Revue Neurologique

(Vol. 17, No. 1)

1. Tremophobia; with Remarks on Convulsive Torticollis and Certain Tremors. HENRI MEIGE.

2. A Case of Acromegaly Treated by Radiotherapy, with Clinical Notes. A. GRAMEGNA.

1. *Tremophobia*.—In subjects affected with tremor there is likely to develop an obsession in connection with the motor trouble, a phobia. Tremophobia presents numerous points of resemblance with a phobia for blushing. The emotional stimuli which provoke blushing are capable of producing tremor; both are reflex manifestations of emotion. In the case of a phobia a vicious circle is excited; the emotion originates a tremor which in turn intensifies the emotion. A case is reported of a patient very unstable psychically, versatile, erratic, and predisposed to obsessions. She was continually travelling from place to place and changing her room in her hotel. She showed in succession: a phobia for blushing, a convulsive tic and finally a tremophobia. She was much improved by treatment. The second case occurred in an officer in the army, whose tremor became very much more marked by emotion. Much improvement was noticed in his case by treatment, which in both cases was along the line of education and special exercises.

2. *Treatment of Acromegaly by Radiotherapy*.—The pituitary body in the sella turcica is well protected in normal state. In cases of acromegaly the enlargement of the gland and thinning of the bony walls make it more accessible to radiotherapy. It is to-day generally admitted that acromegaly is due to parenchymatous hypertrophy of the pituitary body. It is reasonable to suppose that X-ray treatment, therefore, would be of benefit if applied to the gland. The effect would be more noticeable in the symptoms of cerebral tumor than on the acromegalic changes. The case reported presented typical symptoms of acromegaly and of brain tumor, with a duration of thirteen years. Treatment twice a week for an hour with rays of eight to nine Benoist for about eight sances produced a disappearance of the headache and a marked improvement in vision. Treatment was stopped. About a year later the symptoms had returned. Treatment was resumed but not continued on account of the poor condition of the patient. The author concludes that radiotherapy is valuable in these cases and without danger.



(Vol. 17, No. 2)

1. On the Value of Sensory-sensorial Hemianesthesia. HASKOVEC.
2. The Crossed Cutaneous Reflexes. BERLOTTI.

1. *Hemianesthesia*.—The author reports a case of sudden unconsciousness followed by a left hemianesthesia and a left hemianopsia. The lesion is located clinically as a hemorrhage in the posterior and median part of the right thalamus in the motor region of the internal capsule and probably also in the subthalamic region. The symptoms that persisted were: the left homonymous hemianopsia, a left hemianesthesia, with alterations of stereognostic sense and alteration of the sense of position, and a spastic hemiparesis on the left side.

2. *Crossed Cutaneous Reflexes*.—The author concludes that crossed cutaneous reflexes are simply an expression of diffusibility of the reflexogenous zones which is observed in normal states as well as pathologic and which corresponds to ancient laws established by physiologists. The interpretation of this irradiation and the coördination of reflex acts arising from cutaneous stimuli is that of a defensive reaction of the individual.

(Vol. 17, No. 3)

1. Pathogenesis of Nystagmus. CH. SAUVINEAU.
2. Two Signs of Organic Hemiplegia of the Lower Limb. J. RAIMISTE.

1. *Pathogenesis of Nystagmus*.—Nystagmus is due to partial paralysis of lateral associated movements of the eye-balls. There is a critical review of the opinions expressed by the various writers on nystagmus and its pathogenesis.

2. *Signs of Organic Hemiplegia*.—The patient lies on his back with arms crossed on the chest and legs separated. He is asked to move the normal leg over beside the paralyzed one, without elevating it, and at the same time such a movement is opposed by the observer's hands which are placed on the inside of the patient's thighs. It will then be noticed that the paralyzed leg moves over toward the normal one instead of the reverse occurring as requested. If the patient lies in the same position but with the legs together, and he is asked to separate them against opposition, it will be found that the paralyzed leg moves away from the normal one.

(Vol. 17, No. 4)

1. Apraxia of Ideas. LAIGNEL-LAVASTINE and BOUDON.
2. Anisocoria Depending on an Anisometropia. POP-AVRAMESCO.

1. *Apraxia of Ideas*.—The clinical course of the case is divided into three periods: First, an insidious and progressive mental deterioration characterized particularly by amnesia terminating in a fugue which caused the patient to be sent to a hospital. In the second period there was disturbance of the intelligence, of the character of dementia, and with disorientation as to time and space. On analysis she showed aphasia, agnosia and apraxia. The third period was a continuation of the second with a disappearance of some symptoms and the persistence of others which gave the case the appearance of partial dementia. Studied from the schema of Wernicke, the apraxia of ideas is a disturbance in the "intrapsychic processes."

2. *Anisocoria and Anisometropia*.—The left pupil was larger than the right and there was an anisometropia of one diopter. Other causes for anisocoria were ruled out on examination. The author explains that the enlargement of the left pupil was analogous to the enlargement of the pupil which is produced by lessened retinal sensibility as caused by optic atrophy. In both cases there is difficulty in perceiving the image.

(Vol. 17, No. 5)

1. *Tabes with Atrophy of the Muscles Innervated by the Motor Branch of the Trigeminal, the Pneumogastric, the Spinal Accessory, the Hypoglossal and the Lower Roots of the Brachial Plexus.* SOUQUES and H. CHÉNÉ.
2. *The Exaggeration of the Knee Reflexes in a Case of Polyneuritis.* MAURICE PERRIN.

1. *Tabes with Muscular Atrophy*.—Clinical report of a case of tabes with myopathy. The involvement of the fifth nerve was bilateral; the others, unilateral. The electrical reactions, where it was possible to obtain them, showed marked diminution of both faradic and galvanic irritability but no reaction of degeneration.

2. *Exaggeration of Knee Reflexes in Polyneuritis*.—A man, aged 24 years, using alcohol to excess, six weeks after a fall on the feet presented paresthesia of the feet, lancinating pains in the legs, hyperesthesia of the legs with a tendency to fatigue and feebleness. Less than fifteen days after the onset he became paralyzed and a month later was brought to the hospital with an intermittent retention of urine, a diffuse muscular atrophy of the lower limbs, and bed sores on the coccyx and on the right foot. There was slight ability to flex the quadriceps femoris, a diminution of faradic irritability in the muscles, especially the anterior tibial, and exaggerated knee jerks with lost Achilles jerks on both sides. The author regarded it as a case of alcoholic multiple neuritis localized in the legs because of the fall on the feet. The patient's symptoms improved slowly and with the improvement the Achilles jerks returned and he developed a Babinski reflex and slight ankle clonus. He remained apparently well for a year when he developed an abscess in Scarpa's triangle, was operated upon and died. The autopsy showed dorso-lumbar vertebral tuberculosis, psoas abscess, calcareous tubercle in the liver and tuberculous nephritis.

(Vol. 17, No. 6)

1. *Two New Cases of Lesions of the Optic Thalamus Followed by Autopsy, Pure Thalamic Syndrome and Mixed Thalamic Syndrome.* G. ROUSSY.
2. *The Results of Lumbar Puncture in Sunstroke.* R. DUFOUR.

1. *Thalamic Syndrome*.—The two observations show the two different types of thalamic syndrome: The pure thalamic syndrome consisted of a hemiplegia with a minimum of motor paralysis, but with phenomena of motor excitation, hemichorea and hemiataxia; hemianesthesia, both superficial and profound, which was persistent and accompanied by intense pain on the right side of the face. In this case there was a lesion in the external and internal nuclei of the left optic thalamus with slight involvement of the internal capsule. The second observation was of the mixed thalamic syndrome: more marked paralytic trouble of the character of

an organic, spastic hemiplegia accompanied by clinical signs of being outside the optic thalamus, superficial and deep hemianesthesia, and pain. In the second case there was more involvement of the internal capsule and the lesion also affected the lenticular nucleus.

2. *Lumbar Puncture in Sunstroke*.—Report of an observation of sudden loss of consciousness after working in the sun. The temperature was not elevated. Lumbar puncture showed an increased pressure, blood clot and polymorphonuclear leucocytes. The patient improved but still had mental symptoms. The second lumbar puncture showed increased pressure, no blood, but a moderate lymphocytosis. The third and fourth were the same. The fifth, sixty-four days after the onset of the trouble, was negative. The author concludes that lumbar puncture is a valuable therapeutic measure in sunstroke.

C. D. CAMP (Ann Arbor).

### Allgemeine Zeitschrift für Psychiatrie

(Vol. LXVI, Heft 1)

1. The Nervosity of the Working Classes of To-day. MAX LEHR.
2. The Formation of Delusions in Degenerates. KARL BIRNBAUM.
3. Complicated Acute and Chronic Hallucinoses. F. CHOTZEN.
4. The Internment of Insane Criminals. HERMAN STENGER and AUGUST HEGAR.

1. *The Nervosity of the Working Classes*.—Considering the causes of the nervosity of the present time, which is well known to afflict the working classes equally with people of higher culture, the author sums up his conclusions as follows: What distinguishes our modern life from other epochs of civilization, characterized by great changes in conditions and in public opinion, is perhaps not so much its hurry and unrest, nor yet the power of capital, as the utilization to the full of natural forces in the service of the latter, which brings with it the fact that sudden alterations of conditions of life and work affect, not as formerly single classes, but the whole community; not only the leading spirits, but the proletariat. The physician has the opportunity of observing the expression of the generally increased reactivity of the popular mind in the increased number of cases of nervosity and of general neuroses. The new conditions of civilization with the domination of the machine has brought, for the working classes especially, an epoch of bad hygienic conditions, insufficient and unsuitable food, and physical overexertion, together with a breaking with traditional restraints, and an economic dependence upon the machine, consequently an unusual uncertainty of life. Progressive development however points not only to a gradual overcoming of the injurious physical influences, but also to a mitigation of the hard and uncertain life conditions which at present so unfavorably affect the psyche. The more nearly, however, the condition of the proletariat approaches that of the higher classes, the more danger to it of becoming a victim to that tension inseparable from culture, and of so succumbing to nervosity. The more the physician attends to these causes of nervous disease, the better able is he, not only to treat his cases, but to institute prophylactic measures addressed to the root of the evil, and while he may become discouraged by the pessimism which can only see a hopelessly progressive degeneration of the people going on, he should take courage

from the historical researches which indicate that civilization progressing steadily in its own way, however grave the evils of a time have seemed, has always developed among a people forces which in the end were able to overcome these evils and to carry the race forward to a higher plane.

2. *The Formation of Delusions in Degenerates.*—A discussion of the method of delusion formation in degenerates, as illustrated in the case of a man having a very bad heredity, and of criminal and homo-sexual proclivities, who developed the delusion of change of personality into a female whom he designated as "Miss Lieschen," which latter name it appears was his nickname among his associates of the under world. The author does not regard this delusion as paranoid in character, but thinks the condition most closely related to a protracted hysterical delirium.

3. *Complicated Acute and Chronic Alcohol Hallucinoses.*—While the newer researches have shown that psychoses develop upon chronic alcoholism as a basis often enough, cases which can be considered as chronic forms corresponding to the typical acute alcoholic hallucinoses are exceedingly rare. In many of these cases the etiology is a mixed one; the picture may be complicated especially in old chronic drinkers by the presence of arteriosclerosis. The author gives the histories of several cases illustrating these points and sums up his conclusions as follows: So-called chronic alcohol psychoses which are atypical from the start are not pure alcohol psychoses, but in their etiology several elements are combined. There are, however, chronic forms of undoubted alcohol psychoses. Acute hallucinoses with atypical symptoms are not purely alcoholic in origin. Hallucinations of smell and of taste and hypochondriac sensations do not belong to the true alcoholic hallucinosis. The presence of these symptoms indicates that the alcohol hallucinosis is complicated by degenerative process of some sort. Chronic psychoses which succeed true alcohol hallucinoses almost always run an atypical course which is due to their complication by other processes also dependent upon the influence of the alcohol. Especially frequent is premature senescence with arteriosclerosis, which complicates the picture. From the combined effect of alcohol, degeneration of organs and arteriosclerosis multiform chronic hallucinoses with atypical symptoms arise. When, however, in the course of chronic alcoholism and alcoholic psychoses, complications themselves due to alcoholism occur, they do not speak against the alcoholic nature of the psychosis. A pure symptom picture of alcohol hallucinosis in cases pursuing a chronic course is exceedingly rare. Only a case presenting such a picture deserves the name of chronic alcohol hallucinosis. The great majority of chronic cases are complicated and atypical. In the hallucinatory weakmindedness of drinkers the clinical picture is made up from such complications.

4. *The Internment of Insane Criminals.*—The authors base their remarks upon what they have observed in connection with the management of insane criminals in the Grand-Duchy of Baden, considering the arrangements for the care of such patients and giving a number of statistics with regard to age, condition of life, education and previous history, occupation, form of mental disease and termination. They summarize their conclusions as follows: Insane prisoners should be removed from the ordinary prison and placed under special psychiatric care as soon as possible. This can best be accomplished by the addition of an insane department to correctional institutions. In these departments only those becoming insane while undergoing imprisonment should be placed, those

coming into conflict with the law but not sentenced on account of insanity, being best cared for in general asylums. These annexes should have as a definite aim the curing of their inmates, and those not recovering should be transferred to general asylums as soon as practicable; certainly when their sentences have expired. The number of cases from Baden prisons requiring permanent internment has not been so great as to make any serious difficulty if distributed among the existing institutions for the insane. The greater portion of these are of the dement class and require no different treatment from the non-criminal insane. A small number belong to the group of degenerative insanities and, having a constant desire to escape and being dangerous at large, require most careful watching. Of the great number of psychically inferior individuals found in prisons only a small part really require psychiatric care, the greater portion of them needing a correction adapted in each case to the individuality of the subject. The insane brought into the Baden asylums, who have come into conflict with the law, can be divided into two groups: (*a*) A small number in whom criminality and psychosis are in no relationship, or whose criminality depends directly upon insanity. (*b*) The great majority, in whom the criminality depends upon some defect or pathological condition due to heredity or to some unknown individual psychopathic disposition, partly perhaps to some endogenic disease process occurring in early years, of which the first and most important pathognostic symptom is a crime. The influence of environment is uncertain, nor does it seem probable in the majority of cases that the psychosis is a consequence of injurious influences arising from the criminality itself. The second class (*b*) presents greater difficulties in the matter of internment than the non-criminal class. A separation of the so called "psychically inferior" ("Minderwertig") is impracticable on account of the uncertainty with regard to the boundaries of this condition, and the treatment of the psychotic states arising among them must proceed upon the general principles guiding asylum regime. The care of insane criminals in special institutions offers at the present time difficulties which make this practicable only in great countries. The plan of erection of special annexes to existing asylums and placing in them the most dangerous patients of a large district is to be rejected. The greater number of insane criminals do not require different treatment from the ordinary insane. The difficulties arising from the smaller class requiring special arrangements may be lessened and made supportable: (1) Dividing them among a number of asylums. (2) Distributing them in different parts of the asylum and providing suitably arranged separate wards when the number of such cases is sufficient to require it.

(These last recommendations are not in line with those suggested by the experience of alienists in the U. S.) (Ref.).

C. L. ALLEN (Los Angeles).

## Book Reviews

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L'APHASIE DE BROCA. These de Paris. Dr. Francois Moutier. Travail de laboratoire de M. le Professeur Pierre Marie. Bicêtre. G. Steinheil, Paris, 1908.

To attempt a complete analysis of this work is to enter upon no easy task, for it merits close attention as being the documentary evidence upon which Pierre Marie has founded his revolutionary revision of the whole question of aphasia.

All the world knows that Marie's work, as here documented, is a destructive criticism, and in the first place it may be of interest to outline just what Moutier has included in his thesis, and later some reflections may be added as an attempt at reaching some ideas of the value of the views advocated.

There are 758 pages in the book, divided roughly into five parts: three parts of 245 pages, the remaining 500 pages making two parts with justificatory proofs and drawings, and additional matter, a bibliography and a glossary.

Part 1 includes the History.

Part 2 discusses in eight chapters, the Aphasia of Broca, and its Cerebral Localization, Broca's Documents, Favorable Observations, Contrary Observations, Supposed Syndrome of Transcortical Motor Aphasia, Theory of Cerebral Left Handedness, Distribution of the Sylvian Artery, Anatomical Dissociation and Description of Marie's Ideas of Broca's Aphasia, New Localization of Broca's Aphasia, and Recent Publications.

Part 3 is a clinical study entitled "Nature and Symptoms of Broca's Aphasia," with chapters as follows: Classical Description of Broca, Anarthria, Clinical Description, Intellectual Defects of Aphasics, Errors of Diagnosis between Aphasia and Dementia. Criticisms of the New Conception of Broca's Aphasia, Verbal Images.

Under the headings of his "Annexes et Pièces Justicative," Moutier first discusses the writings of others, and then his own work. His personal observations, which will always remain the most interesting, are discussed as chapters on The Examination of an Aphasic, Observations with Autopsy, Study of Brain by Means of Microscopical Series, Observations with Autopsies, Study of Brain with Macroscopic Series, Clinical Observations, Anarthria and the Pseudo-bulbar Syndrome.

With this preliminary glance at the chapter headings, further regard may be directed to the contents. The historical résumé is instructive. Moutier has reproduced practically all of the aphasic schemes, and they make an imposing array, from Gall's ideas of cerebral localization to Langdon's scheme of aphasia in 1903. It is not a complete historical résumé, but is amply sufficient, except in his discussion of the most recent literature, in which it is deplorably lacking. This literature is that which has certainly shown that there is no single modern classical view of aphasia, and that the aphasia problem has been marching on for a great many years, and, as shall be later shown, that Moutier's attack is largely directed to doctrines which have themselves been modified by every serious student

of the aphasic question, but not changed in the direction Marie and Moutier would alter them. Thus what Moutier's historical résumé should show and fails to show is a comprehensive grasp of the real intrinsic march of the modern criticism of the aphasic problem. In the one page of the "Actual State of the Aphasic Problem" and in the five pages of "Contemporaneous Literature" one does not find a word of the work of Von Monakow, Ziehen, Meyer, Freud, Mills, H. Sachs, Bonhoeffer, Heilbronner, Fraenkel and Onuf, Liepmann, Kleist, Storch, nor twenty other authors whose work is of the greatest importance in the gradual development of the aphasic doctrines.

In Broca's Anatomical Documents we have a good drawing of one of Broca's brains, now conserved in the Dupuytren museum, and a complete exposé of his observations. In his Favorable Observations, Moutier states that there exist on record only nineteen observations of aphasia with lesion localized at the base of the third frontal convolution, in eleven the destruction was subcortical, in eight cortical, but the situation, according to Moutier, is even worse, for he states positively, on page 93, that "there does not exist in medical literature a single observation of Broca's aphasia in which one has demonstrated at autopsy a single lesion, rigorously limited to the base of the left third frontal convolution." This perhaps was true, but even then Moutier, with a full knowledge that external appearances and internal lesions are different things, is not justified in drawing any sweeping inferences from imperfect statements of facts, as practically all of the nineteen cases are conceded to be.

In his Chapter III he has collected a formidable series of observations contrary to the so-called "classical" localization. Of 314 autopsies, 301 are not utilizable; of the remaining 103, 19 are grouped with the favorable and 84 with the contraries, of which 57 had aphasia, and intact Broca convolution, 27 no aphasia and Broca's convolution destroyed. Moutier further states in this chapter "there does not exist in medical literature a single case establishing the localization of Broca," and further suggests that the lesion of Broca's center is one of the surprises rather than one of the necessities.

Transcortical motor aphasia does not exist according to Moutier's next chapter. His method of the disposal of the observation of Pick, and of Rothmann awakens the suspicion of his being a special pleader rather than a careful judicious critic, as well as his general superficial criticism of the whole subject of right and left handedness. His study of the distribution of the Sylvian artery is a pretty piece of work. In Chapters VII and VIII the main features of his thesis are presented; in VII a description of the lenticular zone, the so-called new zone for aphasia, and in VIII a résumé of the new doctrines, which, although well known, may be given here again: (1) Aphasia is characterized by a trouble of internal language. It corresponds with the syndrome of Wernicke, which enters in part in the constitution of Broca's aphasia. (2) Broca's aphasia is a syndrome formed by the juxtaposition of two morbid entities, anarthria (lesion of the lenticular zone), and aphasia (lesion of the zone of Wernicke). (3) True, or intrinsic, aphasia is to be distinguished from extrinsic aphasia, *i. e.*, anarthria and alexia. (4) The center of language is in great part an intellectual center. (5) The third frontal convolution has nothing to do with aphasia. (6) The first temporal (so-called auditory images) and the pli courbe—angular gyrus—(so-called visual images) do not contain any of the centers that one is accustomed to localize there. (7)

In cerebral hemorrhages or cerebral softening there are no purely cortical lesions: the white substance is always more or less involved.

This is the re-statement, somewhat modified, of the original Marie announcement, and at once, according to Moutier, adopted in America by Dercum and Collins, by Souques in France, but also rejected by a host of clinicians, chief among whom may be mentioned Dejerine, von Monakow, Liepmann, and Ziehen: a short summary of the recent dissenting opinions being given in this same chapter.

Part III begins with a statement of what the author conceives to be the classical conception of aphasia. It is at once apparent that it is not an attempt at sifting out the various steps of development of the aphasia problem, but really only a categorical statement of one author's views, and not exhaustive at that, namely, Broca's original statements, particularly as later conceived by Dejerine. Chapter II deals with anarthria in which a new definition is manifest, for since there is a true Broca aphasia, which is in reality a mongrel composed of disturbance of the mechanism of articulation (anarthria), with an intellectual defect (aphasia), it is evident that a new definition is needed. Anarthria is the loss of articulation of words. "The anarthric does not know how to talk, the pseudo-bulbar cannot talk," is Moutier's mode of distinguishing these two conditions. This chapter is difficult to follow, since there are contradictions in it, thus, at the foot of page 189, we find that "in aphasics, and particularly in aphasics of Broca, there are troubles of the organs of language not having any immediate relation with the articulation of words. These are limitation and difficulty of movements of the tongue." Here it is seen that the whole subject of apraxia has escaped the attention of the author, to which we shall return later.

Then follows the clinical description of Broca's aphasia, the chief features of which have been outlined already.

Chapter IV discusses the intellectual defect of aphasics. "There exists (page 205) in the aphasic a general intellectual defect, and an intellectual defect specialized for language. The general defect includes memory, descriptive and especially emotional mimicry, association of ideas, judgment, etc. Specialized for language the defect involves reading, writing, the comprehension of spoken or written language. The alterations in these faculties follow the laws of regressive evolution of destruction of intellectual disorders in general. In passing it may be noted that from the psychiatric view point at least this chapter is extremely unsatisfactory. It lacks the fundamental understanding of the work of psychiatrists for the last fifty years in their attempts at analyzing that which we call "intelligence." The author's next chapter on Dementia shows this even more strikingly. Chapters VI on Criticism of the New Doctrines, and VII on Verbal Images, need not detain us. We then have the conclusions already mentioned, but stated in another form, as follows:

The aphasia of Broca is the aphasia of Wernicke, plus anarthria. The aphasia of Wernicke depends on a lesion of the zone of Wernicke, the temporo-parietal zone, the anarthria depends upon a destruction of the lenticular zone. The intelligence is intact in anarthria; the aphasia of Wernicke on the other hand is distinguished by troubles of general intelligence, and by an intellectual defect specialized for language. Sensorial symptoms do not exist in aphasia. Word images have no existence and should disappear. Word blindness and word deafness are intellectual troubles of the comprehension of language.



Then follows the summary of the cases, and the author's own series of microscopical and macroscopical studies. Here we find brief studies of 387 cases of aphasia collected from literature, with complete details of one case of Souques.

Under Personal Observations we have a scheme for examination; then reports in full of the cases of Bertin, Prudhomme and Jacquet; cases in which there was destruction of the third frontal convolution in right-handed individuals without any aphasia—very important documents. Then follow cases of anarthria, and aphasia of Broca with microscopical integrity of the third frontal—Chaput, Duboil, Fripon and Gebel—cases the exact interpretation of which is not so difficult, and not so positive in their significance against the old views, as the author would have us believe; then cases of pure anarthria with lesion of the lenticular zone and of the third frontal convolution, Ham, Rioutord, Perru, Leroudier, and Perin. These twelve cases are the crucial cases on which the doctrines of Marie and Moutier really are founded. In the next chapter is presented a series of cases of autopsy with macroscopical study of the lesions. It is unnecessary to restate that conclusions drawn from macroscopic study of lesions are not of value in the present state of our knowledge of aphasia, and hence they can be passed over rapidly. These cannot be neglected by the serious student, however. A complete bibliography and glossary complete the study.

A complete critique is impossible in this place, but it may be of interest to review three or four points of the claims made by the author with a view of expressing some opinion as to the ideas put forward. One of the most striking features of the new doctrine is that the left third frontal convolution has nothing to do with the faculty of speech, and that the disturbances heretofore correlated with this area are really due to the destruction of the lenticular zone. Historically considered we find, in 1908, absolutely the same thing as claimed by Wernicke in 1874, only that Wernicke put the lesion in the lenticular nucleus, whereas Marie spreads it out to the lenticular zone, which includes so many structures as to make one wonder if cerebral localization is or is not a fact at all. A clear localization, advocated by Wernicke and then abandoned, is thirty years later made less definite and vigorously upheld. What is this new area—the quadrilateral, or lenticular zone? We confess we cannot understand, for it is described only in two dimensions, and the cerebral structures have three, and the front limit of the insula, and the hind limit of the insula, about on a level with the middle of the lenticular nucleus are given as the limits, anteriorly and positively; the mid surface and the limit of the insula, mesially and externally, but limits up, or limits down there are none—and the flimsy sketch on p. 145 of Moutier's thesis gives no adequate idea of what structures are really included. According to the description it includes the insula, the extreme capsule, claustrum, external capsule, internal capsule, caudate nucleus, lenticular nucleus, callosal radiations, anterior white commissure, optic thalamus, as represented in Forel's lenticular bundle, the ansa lenticularis, the thalamic radiations of Forel, the rubro-thalamic fibers, the median fillet and several other things—as Moutier states "the description is manifestly incomplete." Why not have taken the whole brain and been done with it? This great region, comprising so many structures, takes the place of the third frontal convolution. This is cerebral localization running amuck and the whole thing falls to pieces when even the tyro knows that association projection fibers of the

third frontal are included in the area. This is both bad logic and bad cerebral anatomy. But nevertheless, although the cases of Chaput, Duboil, Tripou and Gebel are accounted for, the cases of Bertin, Prudhomme and Jacquet demand explanation. Here, however, we really have no critical anamnesis, and there is no evidence to show that these three, otherwise very important cases, are not cases of cured aphasics. It is inconceivable that such slack history taking should appear in a matter of so much moment.

That no distinction is to be drawn between motor and sensory aphasia is a second point that calls for review. This is admittedly a difficult ground of debate, but Marie's views are in opposition to the vast majority of the newer facts of cerebral physiology; the distinctions of Liepmann and of Wernicke between the hearing of the sound of a word and the meaning are lost sight of entirely. The ready recoverability in the sensory sphere, pointed out by Wernicke twenty-five years ago, is further forgotten, and an arbitrary position is taken, quite inconsistent with a host of observations. That Moutier should rely on the Freud theory of the Henschel case as disproving the existence of word deafness is singular, and now since Freud has made serial sections in the case and shown the correctness of Wernicke's and Liepmann's views the position is farcical.

To the reviewer the academic handling of the question of "intelligence" is enough to stamp the entire teaching of this thesis as untrustworthy and superficial. To the student of psychiatric problems, the prattle about general intelligence and special intelligence is nonsense. After fifty years of careful sorting and picking out of the various reactions which constitute the compound called "intelligence," incomplete though such analyses may be, and full of errors also, to see the results all gathered together and thrown into a confused heap and labelled "general intelligence" is to provoke a very harsh judgment on the psychological knowledge of the would-be leaders. Such advance is crab like—backward—and not forward, and shows a fundamental ignorance of psychiatric teachings greatly to be deplored.

Taken all in all the work has been the occasion for much more careful revision of existing opinions, not because the views advocated have added anything to our knowledge of facts, and not because they may be considered as worthy of careful consideration, but because they have afforded an impetus to a general precision of our concepts, and a closer adherence to the high canons of histological technical procedures originally introduced by Meynert, Wernicke and Dejerine.

JELLIFFE.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### REMARKS ON THE HYPOPHYSIS CEREBRI, INCLUDING A CONSIDERATION OF ITS TUMORS, WITH REPORT OF A CASE.

By D'ORSAY HECHT, M.D.,

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### PATHOLOGICAL REPORT

By DR. MAXIMILIAN HERZOG

OF CHICAGO

FORMERLY PATHOLOGIST OF THE MICHAEL REESE HOSPITAL

The literature concerning the hypophysis cerebri has grown within the past decade or so to very dignified proportions. Most of its chapters are rich in hypotheses, but not so in facts.

Very ancient writings have for us perhaps little more than historic interest, but the succession of papers dating from the appearance of Luschka's monograph in 1860, which we may properly call early modern, indicate that the anatomy, histogenesis, histopathology and physiologic function were studied and developed, each in its turn, within rather well-defined periods of time.

That part of the literature relating to the pathology of the gland, by reason of its less speculative trend, is neither so ob-

scure nor voluminous as many another field of investigation, but the interest and importance that attach to it cannot be gainsaid.

Our knowledge of the lesions, more particularly the neoplasms, of the hypophysis has been greatly enriched in the past five or ten years by well-directed laboratory research, ambitious neuro-surgical endeavor, and it would be unfair, I think, not to add expert radiography.

I shall revert more specifically to these factors in connection with the report of a case of hypophyseal tumor occurring in a child and coming under my notice within the past year. Aside from offering clinical data of interest, together with autopsy findings at once striking and instructive, it has seemed to me not ill-timed to enter upon a somewhat full discussion of symptoms and various other new and interesting aspects of the subject, more especially since by far the greater number of references are to be found only after diligent search, scattered throughout the less accessible special foreign journals. My clinical notes will appear somewhat abridged in favor of a more detailed report of the pathological findings which, in my opinion, are unique, and so far as I have been able to learn without precedent in the literature. My sincere thanks are due my friend and colleague, Dr. Isaac A. Abt, for the privilege of this case citation, together with grateful acknowledgement to Dr. Maximilian Herzog, formerly pathologist to the Michael Reese Hospital, for his valuable interpretation and painstaking arrangement of the pathologic material.

CASE. . . *A tumor of the hypophysis, correctly diagnosed as regards neoplasm, but not localized; absence of sufficient focal symptoms; skiagraphs unsatisfactory but faintly suggestive of cerebellar involvement. Tumor not found at operation because of its deep situation. Termination in death six hours after operation. Autopsy reveals a tumor of the hypophysis shown to be a teratoma arising in all probability from the gland.*

K. F., a slender blonde girl, aged eleven years; American born; was referred by Dr. Tieken to the care of Dr. Abt and admitted to the service of the latter at the Michael Reese Hospital, May 27, 1908. The parents were regarded healthy, as were their direct and collateral antecedents, as far back as could be ascertained. The mother experienced several miscarriages and a still-birth, these, however, occurring after the patient was born. The birth of the girl was spontaneous, at full term, and in all respects normal. Except for whooping-cough, measles and

varicella, her childhood was uneventful. At eight years she experienced three distinct attacks of appendicitis with general peritonitis. During a free interval the appendix was successfully removed and she regained her health, remaining perfectly well for the next two years. About one year ago, at the age of ten, she complained of disturbed vision and headaches that made it difficult for her to pursue her studies. The headaches were frontal, most often occasioned by mental strain during study hours, and in their earlier exhibition were, on the whole, quite irregular. Five weeks after their onset they became increasingly severe and diffuse, extending well back to the nape of the neck, and attended with a feeling of more acute pain back of the eyeballs and in the ears. At this time vomiting appeared, at first only occasionally at breakfast, but later with regularity after each meal. The vomiting, far from being projectile, was preceded by a feeling of nausea, affording the patient sufficient time to conveniently leave the room and use some receptacle. Five weeks prior to admission the right eye turned strongly inward and remained so. Spells of dizziness were occasional. Always a sound sleeper, the patient now rested well only in the fore-part of the night, after that tossing about with headache. Nervous irritability was marked at times and induced by the slightest noises, such as the ordinary footfall or the low-pitched soft voice. The mentality, according to reports, seemed in no wise impaired, nor had the child's disposition changed except for the late outbursts of irritability. Convulsive seizures had never occurred. Neither weakness of the extremities nor clumsiness in any of the voluntary movements had ever been noticed. There was marked constipation, but no difficulty with micturition. During the last five months of her illness there was an increasing aversion for food.

The physical examination, made and noted under date of May 28, was as follows: The general nutrition was fair. The head seemed slightly retracted. Pupils large, equal, regular, with normal response to light and accommodation. Photophobia was present, and in this connection it should be added that the eyes had received atropin for fundus examination. Complete right external rectus paralysis. Dr. E. F. Snyder reported bilateral choked discs, with two or three diopters of swelling in each eye. Ear examination made by Dr. Ira Frank proved negative. The teeth, somewhat irregular as to shape and arrangement, were otherwise normal. Some neck rigidity was present. There were no palpable glands. Heart, lungs and abdominal viscera were negative. Muscular strength seemed normal. The gait was not much disturbed, but on finer tests in the recumbent posture some loss of coördination in the legs was evident. Sensory symptoms were absent. A positive Babinski was obtained on the right side. The skin and tendon reflexes were everywhere present and equally

brisk. Ankle clonus was absent; likewise spasticity. The stereognostic sense was not tested. Hearing was normal; vision was equally defective in both eyes to the extent that the patient could not read type, but was able to discern objects and differentiate those persons having access to the sickroom.

*Clinical Notes.*—On day of admission an afternoon temperature of  $99^{\circ}$ ; thereafter a daily variability of from  $97.3^{\circ}$  to  $99^{\circ}$ . Pulse rate, 80 to 104.

*Laboratory Data.*—May 27, 1908.

(a) Blood Findings: Hemoglobin, 95 per cent.; white cells, 10,600; red cells, 5,372,000. May 30: Leucocyte count, 82,000.

(b) May 31: von Pirquet vaccination test on right arm (Dr. Davenport), negative.

(c) May 31: Ophthalmo-tuberculin test, one minim of a one per cent. solution injected in the left eye, likewise negative.

(d) May 31: Blood. Tuberculo-opsonic index taken and found to be 1.19.

(e) Skiagraphs doubtful, it having been thought by several who saw them that the shadow cast was, if anything, in the cerebellar area, thus prejudicing one in favor of a diagnosis of cerebellar tumor.

(f) Daily urinalyses negative.

The patient was seen by Dr. A. Church, and later by Dr. L. L. McArthur, who performed the operation on June 8. The operative notes in very abbreviated form read as follows:

Operation, June 8, 1908, by Dr. McArthur, Dr. Hoover assisting. Anesthetic, ether. Head prepared in the usual manner for brain operations for two days prior to operation. Fissures of Rolando mapped out on either side. Brain punctured near the left occipital and left posterior parietal regions. Punctures made with fine drill and aspirating needles. No fluid obtained in occipital puncture, but about three or four cubic centimeters of a clear fluid containing three or four white, hard floccules were obtained by puncture in the posterior parietal region. Fluid saved for diagnosis. Semicircular incision, base downward, through skin and subcutaneous tissue to periosteum. Incision began a little above Reed's base line, about in a vertical line drawn through the left external auditory meatus, arching upward and backward, describing a semicircle, and ending about four inches posterior to its own origin. All bleeders caught and ligated with fine gut ligatures. Periosteum incised in similar manner about three-fourths of a centimeter inside scalp incision. Edges of periosteum raised with an elevator. Trephine hole, about three-eighths of an inch in diameter, made in anterior lower angle of wound and the bone cut through from before backward with a rongeur forceps. Base not cut through. Upper edge of bone flap raised and steadily increasing pressure applied on elevators until bone fractured across the base. Bone and scalp flaps

now laid back together. Dura found intact and apparently normal, but ballooning up strongly through skull opening, showing a greatly increased intracranial pressure. Aspirating needle again passed into posterior parietal region, needle passing inward,

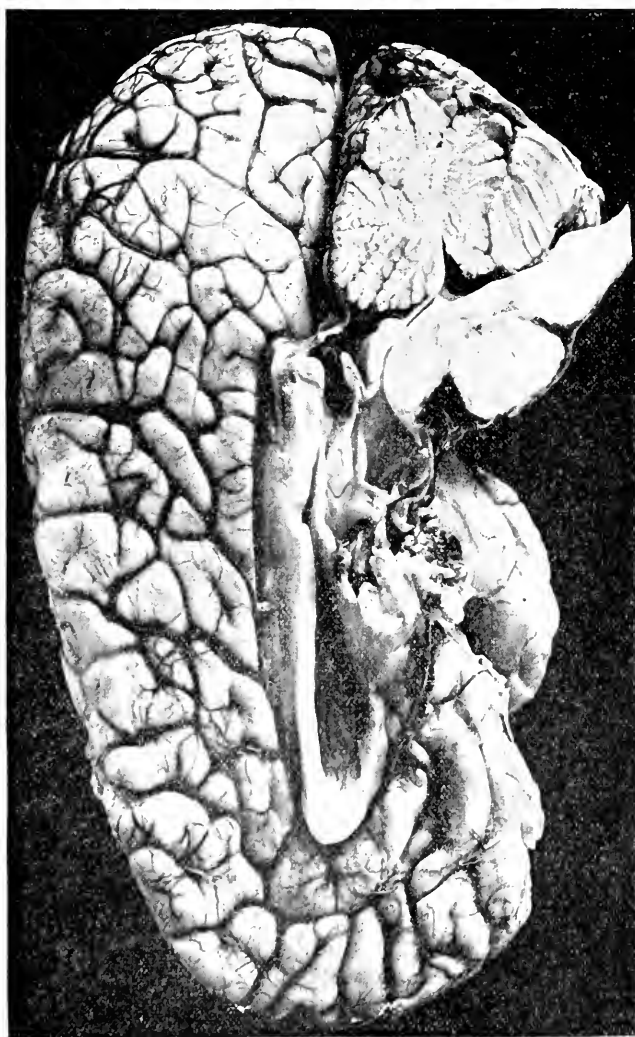


FIG. 1. Median sagittal section of brain showing tumor of the hypophysis.

upward and slightly forward. Several cubic centimeters of fluid withdrawn. Dura carefully washed with warm normal saline; all rough edges of bone smoothed, and the bone flap replaced. Scalp incision closed with continuous waxed silk suture. Wound

sealed with gauze and collodion, excepting about one centimeter at posterior inferior angle. A large dry dressing applied. Stimulating enema given on table. Patient put to bed in poor condition. Foot of bed elevated.

A smear of the cerebral fluid sent to the laboratory was reported upon by Dr. Herzog, as follows: A very few mono-nuclear cells seen in the sediment after centrifuging; some red blood corpuscles; no bacteria of any kind. Small solid particles and carbonate of lime, soluble in dilute hydrochloric, with giving off of  $\text{CO}_2$ . No tubercle bacilli. No evidence of cysticercus or echinococcus.

Shortly before exitus, which followed operation in six hours, one-half ounce of fluid was aspirated through the wound by Dr. McArthur, examination of which was negative.

The autopsy was performed within six hours after death.

The following description of the tumor and histo-pathologic comment by Dr. Herzog is of interest:

"When the tumor was removed with the brain it was found that it had markedly corroded, thinned out and excavated the sella turcica, on which it rested. The neoplasm (photograph No. 1) is more or less globular in outline and has a diameter of about three-fourths of an inch from above downward, and about one inch from before backward. Its longest axis is not absolutely horizontal, but is oblique, so that the anterior attached pole of the tumor is on a higher level than the posterior free end. At the anterior pole the tumor is attached in such a manner that it has become fused with and presses upon the optic commissure. It is also fused to the corpora mammillaria and to the floor of the third ventricle. The pedicle of the hypophysis has disappeared. The neoplasm is apparently everywhere surrounded by a capsule, except where it is fused to tissue of the cerebrum proper. The tumor substance itself looks rather irregular, heterogeneous, and contains small calcareous particles. The cavities of the lateral and of the third ventricle, although markedly enlarged, may nevertheless be considered of moderate size. The aqueduct and the cavity of the fourth ventricle are of normal configuration. In removing pieces of the tumor for microscopic examination, portions of the floor of the third ventricle had to be taken along with the tumor substance.

"The tumor tissue is composed of a variety of cellular elements. It appears that the original tumor parenchyma has been formed by epithelial cells of the anterior portion of the pituitary body. The proliferating cells have formed quite irregular gland- or alveoli-like spaces in a stroma of very loose vascular embryonal connective tissue composed of stellate cells. Where the proliferated tumor cells have arranged themselves into more or less globular spaces we find these alveoli either completely filled with epithelial cells, or there is present only an outer shell of epithelial



cells and an inner mass of hyaline material. The latter, however, is not perfectly homogeneous, like typical colloid, but rather scaly and shows clearly its derivation from degenerating cells which have been moulded together in the interior of the follicles, but have not become completely fused into a homogeneous mass. On the whole, these bodies in the interior of the follicular spaces look somewhat like the epithelial pearls of cornifying carcinomata, although the material does not show any true cornification. It stains with Van Gieson from an almost pure yellow to deep yellow with some red, and even to a deep reddish orange. The epi-

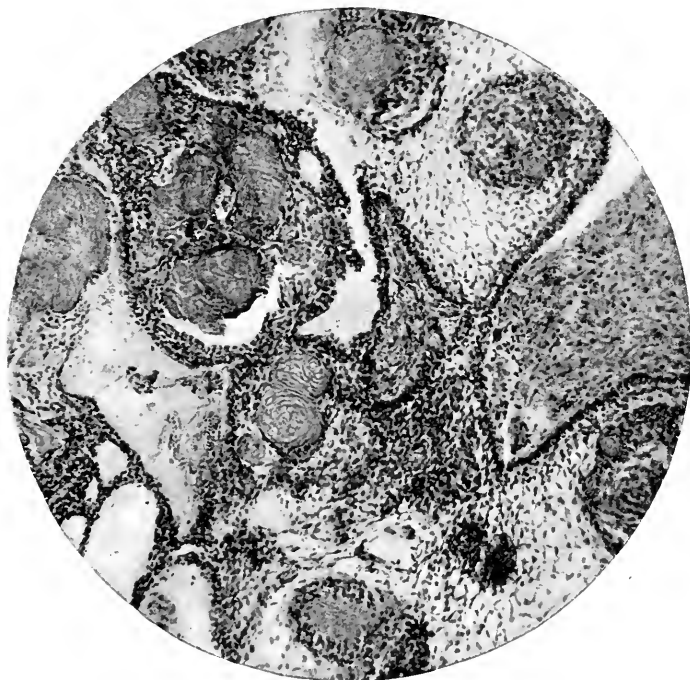


FIG. 2. Section of epithelial portions of the tumor showing colloid material in round bulbs composed of concentrically arranged lamellæ. Magnified  $\times 100$  diam.

thelial cells forming the follicular spaces are cuboidal or short columnar. The latter shape occurs in situations free from pressure. Here the basal vesicular nuclei are oval, while the shorter cubical cells have spherical nuclei. The latter possess a rather finely granular chromatin, while here and there one or two nucleoli are visible. The protoplasm of these cells is very finely granular and takes but a very faint stain. These cells have not only formed the follicular or alveolar spaces, but have also pro-

liferated in a very irregular manner, and this has led to the formation of irregular masses and tracts of cells. In some places giant cells with numerous centrally located nuclei are seen. The origin or derivation of these cells is not clear.

"It is found on microscopic examination that the hard portions of the tumor which were noticed when it was cut consist of osteoid tissue. Part of the latter is composed of very coarse primitive fibrils and fibril bundles which are variously infiltrated with lime salts, some very little, others abundantly. Aside from the fibrillar structure, the bone substance here shows no other differentiation. Again, other portions of the bone show all of the osseous elements of bone-corpuscles, Haversian canals, concentric lamellæ and cellular marrow spaces.

"Where the tumor has become fused with the floor of the third ventricle we find a loose edematous connective tissue, with numerous coarse and delicate wavy fibers, forming a wide-meshed reticulum. To the outside of it is seen a portion of the choroid plexus; its ependymal cells have proliferated and formed branching villous excrescences. No cartilage was found in the tumor, nor any glia cells or fibers.

"This tumor, then, of a mixed type, shows epithelial elements, derived from the anterior portion of the pituitary body, and osteoid tissue, very probably derived from an early embryonal inclusion."

Essential to any epicritic consideration of the pathologic features in the case at hand is a thorough understanding of the development and normal architecture of the hypophysis.

#### ANATOMY

This structure, for so long called the *glandula pituitaria*, is a somewhat flattened oval body, slightly broader than long, of greyish red color, with an average weight of 0.69 (Boyce and Beadles) (1), resting in the *sella turcica* of the sphenoid bone. Bilobate gland that it is, it consists of an anterior and posterior portion, united and enveloped in a fibrous capsule, which is a special prolongation of the dura. These portions are histologically and histogenetically dissimilar. The anterior lobe, the larger and darker of the two, is beanlike in shape and concave behind, where it embraces the smaller posterior lobe. It is glandular in structure and, being developed embryonically from a hollow protrusion, derived from the primary oval ectoderm, is sometimes referred to as the *orohypophysis*. The distal end of this protrusion (Böhm and Davidoff) (2) or pouch comes in contact with the anterior surface of the lower portion of the infundibulum and becomes loosely

attached to it. As the bones at the base of the skull develop, the attenuated oval end of this pouch atrophies, the distal end becoming finally completely severed from the buccal cavity. When this has occurred the anterior portion of the gland is situated in cartilages, which later on become parts of the sphenoid bone, and, as Herzog suggests, it is easy to see how some of these sphenoidal cartilages might become included in the anterior portion of the hypophysis and thereby become the matrix of a tumor containing bone. It is fair to assume that this is what actually occurred in our case.



FIG. 3. Section of decalcified osseous portions of tumor, showing strongly calcified bone fibrils. Magnified 100 diameters.

Several writers have ventured the opinion that any variations in the size of the gland as a whole are due to the variable dimensions of this glandular portion.

Its close resemblance to the thyroid has been a matter of repeated comment.

The vascular supply to the anterior lobe comes from the internal carotid by five branches coming from the trunk within the cavernous sinus. The posterior lobe is supplied by arteries that pass down with the pia mater of the infundibulum

The posterior lobe, connected by a solid stalk with the infundibulum and regarded as a continuation of it, is developed from that part of the embryonic brain which later goes to form the third ventricle. In marked contrast to the anterior lobe it is in its nature a cerebral structure, and for that reason by some called the neurohypophysis.

Especially rich in blood vessels, particularly in veins and lymph channels (Henle) is that part of the hypophysis where the anterior (glandular) and posterior (nervous) portions connect. This junction marks a zone in which epithelial-lined follicles produce a considerable amount of colloid substance.

#### HISTOGENESIS AND HISTOLOGY

Very little space is devoted to the histology of the hypophysis in our English textbook literature probably because of the many unsettled questions, chiefly those concerning cell morphology, undergoing discussion in special foreign journals. Among the few excellent English references I might mention Boyce and Beadles (1), Berkley (3) and Lewis (4); among the German contributions that have been original and of far-reaching importance are those of Luschka (5), Flesch (6), Dostojewsky (7), Rogowitsch (8), Schoenemann (9), Stieda (10), Benda (11), Scaffidi (12), Sternberg (13), Erdheim (14) and Kon (15).

Böhn and Davidoff (2) state that the anterior (glandular) lobe bears a slight structural resemblance to the parathyroid, in that it is surrounded by a fibrous capsule, within which are to be found variously shaped alveoli or follicles, columns or trabeculae of cells separated by a very vascular connective tissue. They go on to mention that in these alveoli are found two varieties of glandular cells, which may be differentiated by their size, structure and staining reaction.

Flesch (6), in 1884, and Dostojewsky (7), in 1886, were the first to distinguish these two forms of cells, which have now come to be known as *chromophile* and *chromophobe* cells. The chromophiles are nearly round or oval, with central nuclei and a coarse granular protoplasm which has an affinity for acid stains. Lewis (4) states, on Erdheim's authority, that the chromophobe cells predominate in the fetus (chromophiles being reduced to isolated cells), but that the ratio between chromophobes and

chromophiles varies with the age of the individual. The chromophobe cells are smaller; they do not stain with eosin and osmic acid, taking on only a light yellow tinge.

At this point in the important histologic researches we encounter confusion, because of variously applied names for identical cells. For instance, Stieda (10) has called the chromophobes



FIG. 4. Same as Fig. 2, showing narrow space and lamellated bone. Magnified 100 diameters.

“mother cells,” and says they have little protoplasm, indistinct cell membranes, and do not take stains. Others refer to “chief cells,” which are cubic or short columnar in shape, with a fine granular protoplasm, basal nuclei, and possessing an affinity for basic stains.

Flesch (6), Lothringer (16), Rogowitsch (8), and Stieda (10), on the one side, contend that the chromophile and chromophobe cells constitute entirely different cell types, whereas Benda, Remy, Guerrini and others are equally assertive of the fact that these are merely different functioning stages, transition forms of one and the same order of cells. It appears that highly special-

ized staining methods are responsible for most of these conclusions.

Scaffidi (12), who was the next to differ with Saint Remy and Benda, enunciated his belief in the independence of these cell forms. Lothringer (16) and Schoenemann (9) among others have again subdivided the chromophile cells into cyanophile and eosinophile cells, based upon their reaction to hematoxylin and eosin. The most recent effort at a satisfactory scheme of differentiating and naming these various cells is that of Kon (15), who thinks it very unlikely that there is any transitional phase from chromophobe to chromophile. He thinks something depends upon the stain used, which in his cases was hematoxylin-eosin and Schmidt's method. He thinks a good arrangement would be: (1) Eosinophiles; (2) cyanophiles, and (3) chromophobes, which latter include the chief cells and "kern" cells. He adds that he found the various kinds of cells rather regularly distributed and noted quite a difference in the structure of the anterior and posterior halves of the anterior lobe, the eosinophiles seeming to prefer the anterior and the cyanophiles the posterior portions.

Although Kon's (15) is the latest addition to the controversy, I am nevertheless impressed with Lewis's conclusions, expressed in his paper appearing in the *Johns Hopkins Bulletin* of 1905, when, after close scrutiny of the trend of histologic investigation, he states: "At the present time it is impossible to state which view concerning the nature of the cells of the hypophysis is correct. . . . Further investigation is needed to determine these questions. Pathologically, it makes little difference which view we accept, for in either case the presence of an unusually large number of cells, heavily loaded with granules, indicates a gland which is functionally more active than normal." What was true of the criticism then is equally true now, and to date nothing definite or final is known of this particular cellular problem.

The posterior (infundibular) lobe, which is genetically a brain structure, is composed in large part of spindle-shaped cells, which, according to Boyce and Beadles, give to this lobe in section the wavy appearance distinctive of spindle-celled sarcomata. Lothringer also mentions this striking similarity of normal structure to sarcoma.

There are present also glia and pigment cells, and the gland

acini are cystic in character and contain colloid, whereas some of the colloid is outside the alveoli.

#### PATHOLOGY

Among the very earliest references to tumors of the hypophysis are those of Friedreich (17), who, in 1853, discussed their symptomatology. The *Virchow Archiv*, in the years that followed, contained papers by Eisenlohr (18), Weichselbaum (19), Ribbert (20), Breitner (21) and Arnold (22), and isolated case reports were quite numerous. Boyce and Beadles (2), in 1892, in a paper on the pathology of the hypophysis, divided the tumors arising from and in the region of the gland into the following groups: (1) Abscesses and granulomata; (2) hematomata; (3) tumors of the infundibulum and posterior lobe; (4) tumors of the membranes surrounding the hypophysis, as lipomata; (5) glandular neoplasmata; (6) teratomata. They append a literature in accordance with this classification and record 77 cases. Since 56 of these fall into group 5, of glandular origin, and 3 into group 6, the teratomata, we may disregard the other groups, except to say that in them we see reflected an effort at refined classification.

Neither from this collation nor subsequent ones can we form an accurate opinion as to the frequency of hypophyseal tumors, because the cases are so variously reported, most often according to some points of special clinical significance. Thus we will find it necessary to search the records of ophthalmology, treatises on acromegaly, contributions to intracranial surgery and references in general and special pathology. Mindful of this difficulty in making up an exhaustive tabulation of cases, I nevertheless feel that tumors of the hypophysis and infundibulum are quite rare, although by no means the "rara et curiosa" that some writers would have us believe.

Hypophyseal tumors are, on the whole, slow-growing and benign. In size they may vary from a millet seed up to a pea, and occasionally attain to the size of a walnut, but sarcomata having the dimension of a hen's egg or a male fist have been reported.

They are capable of excavating the sella turcica, penetrating through the base of the skull and growing into the nasal sinuses. In one case, that of Rottman (23) a diagnosis of the kind of neoplasm was made only after its protrusion into the nose. In a case

of sarcoma angiomatodes, reported by Pechkranz (24), the tumor extended into the orbits. Only a minority of these neoplasms press into the brain substance or invade the ventricles.

As concerns the variety of neoplasms, Oppenheim (25) states we meet with simple hyperplasia, adenoma, glioma, sarcoma, carcinoma and teratoma. Weigert describes the hyperplasias as strumas.

Starr's (26) statement that pituitary growths are usually of the nature of fibroma or myxoma is, I think, in need of revision.

The teratomata are in their nature a fetal type of tumor and present structural changes quite identical with those noted in our case. Gowers remarks that the hypophysis would seem to be the site of predilection of congenital growths, and refers to Beck's case, in which a tumor of the hypophysis of the size of a walnut, containing bone, cartilage and teeth, caused no symptoms. Hale White's case, in which cross-striped muscle fibers enter such a congenital growth, and Bowlby's, showing areas of bone and epithelium, are cited as suggestive of an embryonic development of the gland from the oral cavity.

Considering the readiness with which they could arise, the teratomata curiously enough are very rare.

Bruns (27) divides the tumors of the hypophysis, which he says for the most part arise in the anterior and spread to the posterior portions of the gland, into homo- and heteroplastic. The homoplastic growths are made to include the simple hypertrophies, colloid and cystic enlargements, and the adenomata. The heteroplastic are the round-cell sarcomata, the teratomata, with their epithelial, cartilaginous or bony content, the primary and metastatic carcinomata, lipomata, tubercles and gummata; of these the sarcomata are most commonly met with. Pechkranz (24) states that the adenomata and carcinomata predominate in the anterior part of the gland, and the sarcomata arise from the posterior portion.

Kon (15) has very recently reported a case of cretinism with a teratoma in the hypophyseal region, a case of periepithelioma, and one of angiosarcoma with extensive hemorrhage.

The question of the relationship of hypophysis tumors to acromegaly has always caused lively discussion. Marie and Marinesco (28) maintain that the hypophysis is constantly and appreciably enlarged in acromegaly. Ewald, Somers and others



believe that in the *genuine* acromegalic types observed by them the hypophysis was very little, if at all, enlarged.

If the crux of the argument lies in the dimensions of the gland, then Zander's (29) point is well taken that as yet not enough is known of the normal limits in size to say what constitutes enlargement.

Contentions to the contrary notwithstanding it is now quite



FIG. 5. Section of soft portions of tumor showing giant cells. M. 400 diam.

well settled that a tumor may be present without causing acromegaly, and conversely acromegaly may exist without a tumor being found present. Woolcombe's (30) case of a psammoma of the pituitary without a trace of anomalous body growth is illustrative of this.

Sternberg (13), in his monograph on acromegaly, published 210 cases, with 47 post-mortems, and made the observation that acromegaly appeared in three varieties: (a) A benign form, lasting fifty years; (b) chronic acromegaly (the commoner type),

lasting from eight to thirty years, and (c) an acute form, of which there were but 6 cases, all due to *sarcoma* of the hypophysis, in which the disease lasted from three to four years. Sternberg's original report of six cases is increased to ten by the citation of two cases of Williamson's (31) and one each of Osborne's (32) and Rolleston's (33). In the latter's case the tumor was the size of a walnut and so creamy and soft that removal was very difficult, and a large part had to be left behind in the deeply excavated sella with its smooth walls. Rolleston remarks that the course of three years taken by this growth leads him to think that pituitary sarcoma may be less malignant than sarcomata in general. It is worthy of mention that while sarcoma of the gland may, as is shown by these and other recorded cases, give rise to acromegaly, extension into the gland of a sarcoma arising, for instance, from the middle fossa of the skull, has proven fatal without the development of acromegaly.

#### SYMPTOMATOLOGY

The lesson of the *localizing* importance of certain of the symptoms of hypophyseal growths is not to be learned from any observations we were privileged to record in our own case, which came to us with insufficient data as to mode of onset and early development, and had progressed so rapidly and so far as to admit of but the single conclusion of intracranial neoplasm. This is regrettable, since in a retrospect of the case it would seem that a tumor occurring in a child of eleven, situated in the hypophyseal area, in all probability congenital and for ten years apparently quiescent, might have given evidence of its slow advancement in some distinctive ocular manifestations, such, for instance, as shrinkage of the visual field, bitemporal hemianopsia, or slight fundus change, before the onset and rapid accession of intense general symptoms of brain tumor. For a proper clinical valuation of focal symptoms, the topographic relations of the hypophysis to the optic chiasm and neighboring structures, as well as to the ocular nerves that traverse the base, must be kept well in mind. The need for this may be inferred from the fact that the symptoms on the part of the eye are invariably among the first, if not the very first, to appear in the course of lesion in the so-called hypophyseal region.

I think not sufficient pains have been taken to distinguish the tumors having their origin *in* the gland from those invading the

gland from the immediate neighborhood referred to as the hypophyseal region (the Hypophysengegend of the Germans). This shortcoming must be clear to all who review the literature. Only by the closest scrutiny on the part of clinicians as to the mode of onset and march of the earliest symptoms will this differentiation be possible and ultimately prove valuable in estimating the chances of surgical success.



FIG. 6. Section through portion of tumor fused with floor of third ventricle, showing villi of ependymal cells. M.  $\times 100$  diam.

That our average clinical deductions from topographic premises are not entirely free from objection is best shown by the studies of Zander (29), who, upon careful investigation in more than one hundred preparations of the position of the chiasm, tracts and nerves, the pressure possibilities from an enlarged gland, implications of surrounding structures at the base, etc., concludes that our ideas of dimensions in this area are erroneous, anatomy textbook references inaccurate, hence diagnostic inferences likely to be incorrect.

This criticism aside, I shall in my discussion of the localizing symptoms on the part of the ocular apparatus draw for information upon the best sources coming to my notice in the combined neuro-ophthalmologic literature. The eye findings constitute perhaps the most positive diagnostic features of hypophyseal tumors. In nearly all cases (as in our own) the disturbance of vision is very marked, frequently terminating in unilateral or bilateral blindness. The reduction in visual acuity is in the majority of cases a gradual one, with one eye usually affected more than the other. Bartels (34), reviewing the literature, finds that unilateral blindness occurs in about 33 per cent. of the cases, while it is bilateral in 16 per cent. Complete amaurosis may occur very early, within a short time after onset of the disease, and in v. Henneberg's case existed for thirteen years prior to the patient's death. In our case the visual defect in all probability did not long antedate the terminal period of the disease. Variations in sight have been noted in the nature of short favorable remissions. Such instances are reported by Bartels (34) and Erdheim (14), the latter explaining the phenomena on the theory of cyst evacuation, which was confirmed in his case at post-mortem. It should not be forgotten that such remissions occur in tumors elsewhere in the brain, and are said to bear some unknown relation to the choking of the disc.

Of the anomalies of the visual field, I shall refer first to bitemporal hemianopsia. The diagnosis of hypophyseal tumors does not, as some believe, depend upon the presence of this symptom. If present, it has great localizing significance, but in many cases it is absent. In 22 cases coming to autopsy in which hemianopsia had been carefully examined for, 23 per cent. were bitemporal, 23 per cent. unilateral, 9 per cent. homonymous, 22 per cent. concentric narrowing of visual field, 4 per cent. irregular shrinkage of the field, 9 per cent. a sector, 13 per cent. central scotoma. In this quite small material we note a great variation.

Oppenheim (25), also emphasizes that the bitemporal defect is not nearly so common as supposed, but adds that its presence lends much weight to the diagnosis.

Uththoff (35) states that the visual fields are too often overlooked if patients come too late for the detection of these early disturbances, which frequently eventuate in complete blindness of one or both eyes. This reflection is strengthened by Oppen-

heim's contention that amblyopia and amaurosis are more often noted than disordered visual fields. In a few cases of acromegaly a constant change in the fields has been noted. The occurrence of central scotoma is interesting and may give rise to error in diagnosis, as in Pontoppidan's (36) case, which was regarded as a retrobulbar neuritis and upon autopsy proved to be a large sarcoma lying behind the chiasm and flattening out equally both optic tracts. Bartels, who cites a similar instance, says no satisfactory explanation is at hand for this finding.

As concern the fundus findings in hypophyseal tumors, Rath's (37) conclusions, based upon thirty-eight cases collected from the literature, are not altogether satisfactory, for the stated reason that the material entering into his tabulation was analyzed at a time when ophthalmoscopy was a somewhat new art and the fundus of the eye an unexplored field. He states that ten cases were reliably examined, and in these there was noted either early advanced optic atrophy or choked disc. A well-defined bilateral choked disc was present in only half of the cases, and Rath suggests that bilateral choking seems more rare in hypophysis growths than in neoplasms elsewhere located in the brain. Heusser, who, one year earlier, published the eye findings in twenty cases, was of the same opinion. Bernhardt entertains a like view, and offers as an explanation that the early direct pressure on the chiasm, tract or nerve leads rather to quick atrophy than long standing swelling. Sternberg (13) and Oppenheim (25) concur in this view. Bartels's (34) recent tabulation of 40 cases of hypophysis tumors with autopsy is of great value, and reads: Simple bilateral atrophy in 20 cases (50 per cent.); bilateral choked disc in 15 per cent. neuritis and subsequent atrophy, 15 per cent.; perfectly normal discs in 10 per cent. The fundus findings in his own case are indeed extraordinary and not exactly duplicated in any case on record. In the beginning he observed an optic neuritis with gradually progressing atrophy that became complete, with vessels hardly discernible. One year later the atrophied disc was seen to be prominent, intensely swollen, with veins that were slightly dilated and tortuous. At autopsy the findings of an atrophic choked disc were confirmed. In this connection Bartels enters upon a lengthy and keen analysis of all the anatomico-pathologic possibilities that could induce this and for that matter all other fundus anomalies. It is too elaborate

an argument to receive more than mention in a neurologic résumé, but ophthalmologists will find it interesting and valuable.

It may suffice to say that the rôle of vessels in cutting off nerve fibers must be reckoned with. Bartels says: Denn wir fanden, dass eine häufige Schädigung der Sehbahn durch Gefässe bei Infundibulum u Hypophysengeschwülsten wahrscheinlich ist, nach Lage der anatomischen Verhältnisse, wie oben genauer aus einandergesetzt ist. Die Durchschnürung kann zur Atrophie führen; eine genauere klinische Erscheinungsform können wir noch nicht feststellen.

Ocular palsies occur. Of the extrinsic type ptosis is not infrequent, having occurred in Rath's series seven times (twice bilaterally); the abducens is far more rarely involved. These muscle disturbances find their explanation in the situation of the tumor. In two of Rath's cases there was a paralysis of all the eye muscles and in a few instances a slight ptosis.

Many observations of the pupils have been noted, such as mydriasis, myosis and total iridoplegia. Bach (38), in his admirable work on Puppillenlehre, states that a hemiopic pupillary reaction may occur in hypophyseal disease in association with a hemianopsia. Of other cranial nerves, it is not unusual to find the trifacial affected, causing boring pains in the eye or slight objective sensory disturbances in its distribution on the face. In Benda's case gasserectomy was performed for the uncontrollable pain.

In considering an entirely different group of symptoms, some of which fall into the category of the general phenomena of increased intracranial tension, we may mention firstly headache. In our case it was described as present almost from the first, severe, diffuse, extending to the occiput and associated with pain back in the orbit and ears. The posterior orbital pain seems to be not uncommon, having been described in five cases by Rath as a sense of deep burning and pressure in the orbit. In middle fossa tumors these pains may be attributed to the basal course of the trigeminal fibers. One instance of very intense ciliary neuralgia resisting all narcotics is reported (Rath). There is a difference of opinion as to the constancy of headache as a symptom of hypophysis tumor. Bernhardt found it an initial prominent symptom in 80 per cent. of tumors of the gland, and in 70 per cent. of tumors in the hypophysis region. Generally intense in

degree, even with marked exacerbations, it was diffuse in three cases, at the fore-part of head in 8, frontal in 2, fronto-temporal in 2, temporo-parietal in 2 and parietal in 2; never occipital. Contrasted with this is the statement of Bartels that in his case, although enormous intracranial tension was present, sufficient to flatten out the convolutions, headache was entirely absent, except for a short while at the onset of the disease. He emphasizes that in his tabulated series headache was seldom mentioned and adds that Rath and Fuchs also comment upon its absence. Other writers mention a fronto-temporal ache, with the feeling of sharper pain radiating into the orbits. Oppenheim does not refer to it. Tinnitus has been recorded as a result of inclination of the head to one side by v. Hippel and Bruns and Bartels. Vomiting occurred in 42 per cent. of the series and vertigo in 30 per cent. of 38 cases collected by Rath. In our case the former was a very constant and the latter an occasional symptom. He noted no convulsive seizures, although the epileptiform variety has been reported.

Contrasted with these observations is the comment of Bartels, who states that his case teaches that in tumors of the infundibulum the general symptoms of vertigo, headache, and vomiting can be entirely absent. Somnolence, stupor, coma and loss of consciousness may supervene in the late periods of the disease. Some observers have thought that conclusions could be drawn from these psychic states as to the size of the tumor, inferring from their absence a growth with a small circumscribed area of involvement, and from their presence widespread advancement with distention of the ventricles. Bernhardt, who seems exceedingly analytical, has set much store by the psychic changes associated with tumors of the middle fossa and hypophyseal region and Rath agrees with him that speech anomalies, irregularities (stuttering), incoherencies, etc., are quite characteristic of tumors here.

All writers are quite agreed that objective sensory disturbance and errors or deficits in motility play little or no part in the symptom-complex of hypophyseal growths.

Of the special sense organs, the one subserving smell is occasionally mentioned as involved. When anosmia of cerebral origin can be demonstrated, hypophysis tumors should be thought of, but as a matter of fact the loss of smell was complete in only one case, due to compression of the nerve.

Many of these clinical conclusions I deign to say may be questioned, if for no other reason than that the observations date back several decades, when diagnostic technic was neither so thorough nor advanced as now.

Of other clinical features occurring in tumors of the gland and neighboring area, there remain to mention diabetes mellitus and insipidus.

Because our case presented variations of the temperature ranging from  $97.3^{\circ}$  to  $99^{\circ}$ , it is of some moment to note that Petrina Götzl-Erdheim (39) and Bartels have recorded similar fluctuations. An explanation is not easy, but in the absence of any other foci in the body accounting for so constant a rise, the influence of the tumor on the thermogenic centers is to be thought of.

It would far transcend the limits of this paper to dwell upon the many curious phenomena so frequently found in association with hypophyseal tumors. I refer to menstrual disturbances of the nature of amenorrhea, with or without sexual infantilism; marked adiposities, anomalies in skeletal growth, etc. It would likewise be too great a task to enter upon a discussion of the functional correlation between thyroid and hypophysis, or, for that matter, the connection between this particular gland and any of the other ductless glands, which would soon find us in touch with the broad subject of the internal secretions.

We are as yet in no position to solve these problems and hence I defer in favor of a word or so concerning skiagraphy and surgical procedure in these cases.

Of very considerable value is the X-ray in reënforcing the clinical diagnosis of hypophysis tumors. In many of the carefully studied cases of probable growth in this region, skiagraphs have been taken which clearly show by a well-defined shadow the deformation of the sella turcica. It is the outline of the sphenoidal sinus and sella turcica that leads to the recognition of neoplasms in this region, and not any shadow of the tumor itself. From such an outline, however, one can get no idea of the size or direction of the growth. Although in our own case there was much corrosion and excavation of the sella and the bone elements in the tumor would have supplied any additional density necessary to the production of a skiagraph admitting of but one interpretation, and that positive, we had to be content with an indistinct



negative entirely devoid of localizing value. What appeared to be a faint shadow in the cerebellar area led to the choice of operation undertaken.

Schüller (40) speaks of the readiness with which tumors in their basal location may be diagnosed from skiagraphs. The importance of such pictures to the surgeon may be inferred from the case reports of the past few years, submitted by such observers as v. Eiselsberg (42), Hochenegg, Schloffer (43), Horsley (44), Löwe (45), Schuster (46), Cushing, all of whom I believe are credited with the successful removal of hypophysis tumors.

Oppenheim (41) has several times commented upon the X-ray in brain tumor diagnosis, and emphasized its particular utility in hypophyseal tumors, in which an enlargement of the sella can be definitely seen in clear outline when the skiagraphs are well taken.

Frankl v. Hochwart (47), Stumme (48) and Schüster have similarly expressed themselves.

#### SURGICAL ASPECTS

From their deep situation, tumors of the hypophysis have been regarded as inoperable. Of late years, however, surgeons have shown a disposition to invade this hitherto inaccessible endocranial field. In so doing they have been animated chiefly by a desire to save eyesight and alleviate the intense head pain that is but the natural sequence of dural tension from the enlarging gland in its bony receptacle. A second motive would be to determine the effect of hypophysectomy on the course of acromegaly and Fröhlich's disease, its influence over disordered sexual function, certain psychoses, etc., conditions which it is believed are intimately interwoven with ductless gland secretions. No doubt the successes in goiter surgery have contributed not a little to the activity in this new field. Experimentalists have been occupied with problems for some time, and in this particular field the work of Horsley, Paulesco (50), Friedmann and Maass (49), Gemelli (51), Cushing and Redford (52) has been directed at the question of the gland's importance in whole or in part to the continuance of life. The effect of hypophysectomy on animals has been variously construed, but Paulesco and Cushing are in agreement that total extirpation of the gland in dogs is incompatible with the prolongation of life. From their earlier investigations, Horsley and Friedmann and Maass have reported a few

instances in which animals lived. As to whether these conclusions will hold good in the contemplation of the surgery on the human gland must for the present at least remain *sub judice*. Other questions aside, it need not follow that because the hypophysis is vitally essential to the dog that it must be so to man, since we see many physiologic functions differently arrayed in animals and man.

In the few cases reported, the respective surgeons contend that both tumor and gland in its entirety were removed.

Despite the fact that the surgical achievements in human hypophysectomy are confined to a very few cases in the hands of a very few operators, the operative route to the gland, undertaken in various ways, has already been thoroughly exploited in the latest writings on the subject.

Be it said to the credit of contemporaneous surgery (the thought of surgical intervention is as recent as 1893), that the gland is not now lacking for avenues of approach. The several methods advocated are the intracranial, the oral, and nasal. The intracranial and oral routes have much about them that is objectionable. They are dangerous, difficult, uncertain and attended with shock to the patient. The oral gives a poor survey of the field of operation. Horsley (44), in 1906, reports having performed 9 hypophysis operations, with 2 deaths. He adopted the intracranial route, with elevation of the frontal lobes and access to the middle fossa at the base by elevation of the temporal lobe. The extracranial approach through the nose, known as the nasal or transsphenoidal route, is, according to Hochenegg, Schloffer (43), and v. Eiselsberg (42) (all of whom have done the operation on man), the preferable and only feasible one.

Cushing (52) defers judgment as to the best method of access, saying: "Without entering into a discussion of what will come to be the preferable method of approach to the gland in man, the transsphenoidal method for experimental purposes possesses obvious objections, on anatomical grounds as well as for reasons relating to sepsis." In his animal experiments he emulated the example of Paulesco (50) in the use of bilateral cranial openings.

Schloffer (43) states that the disadvantage of the nasal method lies in the danger of the withdrawal of too much cerebrospinal fluid, and the liability to infection resulting in a meningitis from the established communication between the nose and cranial

cavity. He adds, however, that "it is improbable that the cerebrospinal fluid would escape in such amount as to endanger life."

The element of meningeal infection is minimized by the fact that the secretion is free and resorption from stagnant toxins is not apt to occur. Schloffer's tumor case, which he presented as cured eight weeks after partial extirpation, was diagnosed from the hemianopsia and skiagraph findings. It proved to be an adenoma. He removed four-fifths of the gland. He commented upon the absence of meningitis, and justified the operation from the fact that the greater part of the gland had been removed without in any way endangering the life of the patient.

The ultimate opinion as to when, how and how much to operate in these tumors is awaited with keen interest by all who are following the trend of surgery in the obscure field of the ductless glands.

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## ANGIOSARCOMA OF THE LEFT HEMISPHERE<sup>1</sup>

By C. EUGENE RIGGS, A.M., M.D.

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The clinical case I am about to report presents nothing new as to symptomatology or pathological findings, but is a record simply of a malignant infiltrating growth of the left hemisphere. The patient, Mrs. G., was referred to me by Dr. B. J. Merrill, of Stillwater, April 14, 1908. Since 1906 she had complained of certain peculiar attacks which had greatly frightened her, and for a year previous there had been a queer feeling in the right side of the face. She had also been subject to crying spells, sometimes crying all night. Ten days before consulting me she was observed to drop her fork and spoon when eating and for the first time it was noticed that her right hand was paretic. The day following she could not use the right hand at all, although she could move her arm slightly. She came on the electric line, a distance of nineteen miles, to consult me. She was able to walk, but with difficulty, and complained of great fatigue. Her hand and arm were paralyzed and there was involvement of the right face.

I find no record as to the stereognostic sense or the involvement of sensation on the affected side. The invasion of the brain by the growth leaves no doubt as to what the symptoms must have been in that respect. The mental reflexes were sluggish, yet she answered all questions intelligently. Within two days the entire right side was completely paralyzed and she had become semicomatose.

December 25, 1906, she awoke from a sound sleep and found herself unable to speak. She made a peculiar noise in the throat; the tongue seemed thick and there was a tonic spasm of the right side of the face; this attack lasted about five minutes. March 15 and 16 she had two similar seizures, both at night. Later in the month she had two more attacks, one at night, the other during the day, at which time her face became flushed. She was perfectly conscious and locomotion was unimpaired. There were only two attacks in June, 1907, both occurring during the day. In August she had but one, which rendered her speechless for nine hours; her face was drawn to the right for a short time and there was a twitching of the muscles of the throat and tongue; the twitching of the tongue continuing at intervals all during the

<sup>1</sup>Read at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1909.

day. The word "twitching" as used by the daughter does not fully describe the condition, because at these times the tongue would be protruded, the eyes roll upward, and the arm be extended and rigid. These attacks occurred every five minutes during waking hours from the last week of September to the middle of October, when there ensued an almost complete cessation for five months. After October there was observed a trouble of speech, she found it difficult to pronounce words, especially those of several syllables; her mental reflexes were slow, and she was inclined to sleep a good deal. Her talk at times was childish and her memory bad. There was no headache, no nausea, no vomiting. There was optic neuritis of both eyes.

Neither the family nor personal history of Mrs. G. revealed any facts bearing upon her case. When she came to the hospital she was in a stuporous condition. There was paralysis of the right face, arm and leg. The wrist, triceps, and knee-jerk of the right side were all exaggerated; there was also marked clonus of the right foot. The reflexes on the left side were all normal. There was no Babinski. Percussion elicited marked tenderness over left parietal region. Dynamometer, right hand, 0, left 20 degrees. The power of flexion and extension of the left arm was impaired, that of the right absolutely lost. The pupils were equal and normal in size; reacted sluggishly to light, but nothing in regard to accommodation could be elicited. Hemoglobin 80 per cent., red blood cells 5,248,000, leucocytes, 8,134.

On April 11, Dr. R. O. Earl, of St. Paul, made an exploratory operation. The brain surface in the left Rolandic region was dark colored and more resistant than normal; there was an infiltrating growth apparently extensively diffused through the brain tissue; there was also marked intracranial pressure. A radical operation being impossible, the bony flap was replaced and the skin sutured. The patient died two days later.

The brain was not as carefully handled at the time of autopsy as it should have been. Subsequent examination showed it to be extremely collapsed and flattened and there were four longitudinal cuts in each hemisphere, all of which made it very difficult to define the limits of the lesion with accuracy. The infiltration extended anteriorly to the precentral motor area and posteriorly it involved the sensory areas and extended into the temporal lobe. The growth penetrated deeply into the brain, involving the internal capsule. From the left hemisphere there were removed three tumors, two at the time of operation and one at the autopsy. These were examined by Dr. Rothrock, of St. Paul, to whom I am indebted for drawings from sections of the first two tumors and for the following description of the pathological findings in all three.

*Small Tumor No. 1.*—Removed at time of operation from Rolandic area. Tissue highly vascular, consisting of well defined

blood vessels with walls with considerable areas packed with blood cells in the intervening spaces. Stroma chiefly new forming connective tissue or tumor formation, leaving very little brain structure to be seen. Everywhere may be seen cells with densely stained nuclei varying in character, round and spindle type, the latter predominating in the preparation. There are two areas of considerable size to be seen, consisting of rather densely packed cells, round and spindle in type, the latter predominating, all with deeply stained nuclei. These areas are characteristic from the

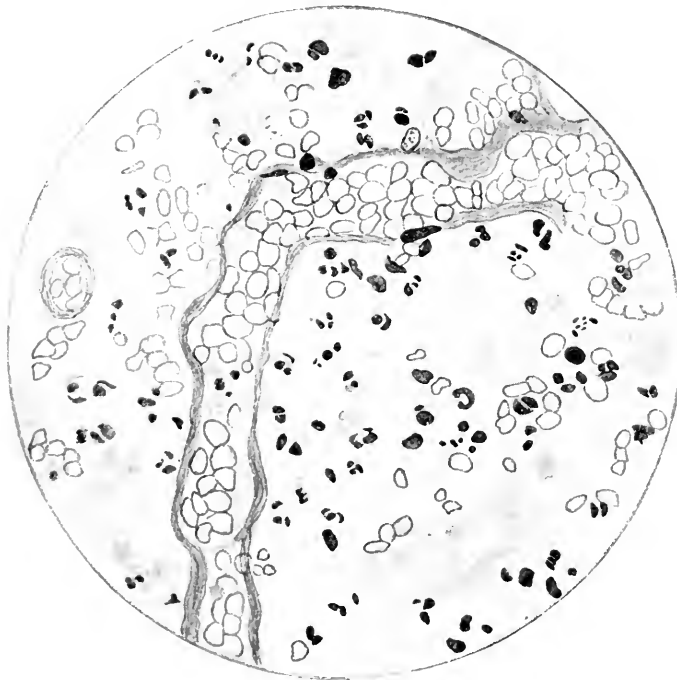


FIG. 1. Drawing from one of Dr. Rothrock's sections of the tumor.

fact that the accumulation is massed around a well defined blood vessel whose walls are intact. Even these cell masses show in the interspaces numerous blood channels, some with walls, others without. Those without walls are separated by a fine net-work containing a few spindle-shaped cells with deeply stained nuclei. In a few places the cell nuclei contain much coloring matter, but could not be classed as constituting melanotic sarcoma, but rather cells rich in chromatin.

*Small Tumor No. 2.*—Removed at time of operation. General arrangement of tissue is similar to that of smallest tumor, but

character of cells more decidedly spindle type. In this specimen is a considerable area in which cells are massed and give a rather typical picture of spindle cell sarcoma, the nuclei of the cell staining very deeply with hematoxylin. In these densely packed areas it is noticeable that there is less extravasation of blood than in other portions of the section. In this preparation also the pigment cells are rather more marked and their distribution more general. Otherwise structure same as in preceding specimen.

*Large Tumor No. 3.*—Removed at post-mortem. Shows in the main an arrangement similar to the other two specimens. The tumor is highly vascular in places, resembling an angioma.

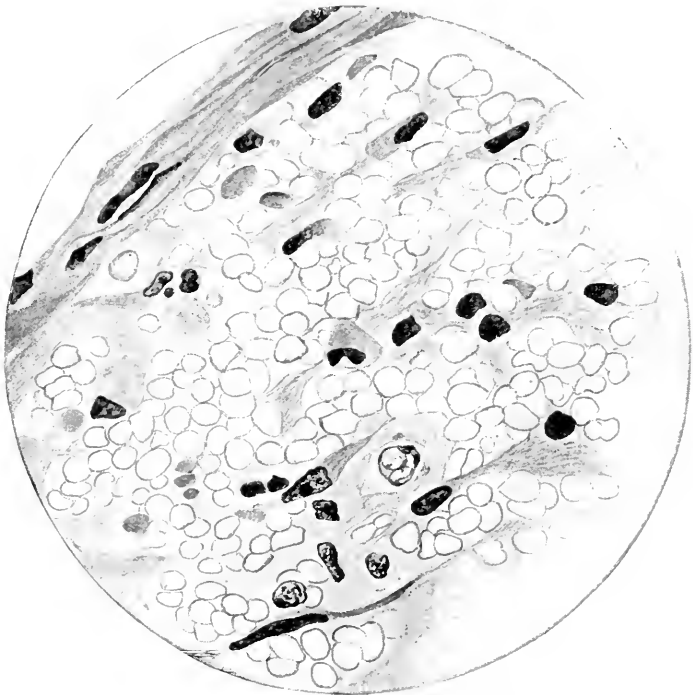


FIG. 2. Drawing from one of Dr. Rothrock's sections of the tumor, Spindle cells.

The general arrangement is almost identical, but the character of the cells differs. In one place is a mass of cells which are densely packed but do not stain clearly, consisting of small round cells. In other portions of the tumor, however, simple cells predominate.

Dr. Johnson of the University of Minnesota has made a study of the nerve cells in six different areas of the affected cortex. The sections were stained by neutral red to demonstrate the



tigroid bodies (Nissl). "All the sections show," says Dr. Johnson, "that the tumor was infiltrating and had no definite boundaries. They show also that the infiltration followed the blood vessels, affecting streaks and strands of cortical tissue and also of deep white matter, while leaving larger or smaller areas in normal condition. This accounts for the intermittence of the attacks and for the wide extent of the disease before a fatal onset in the motor area."

## THE CARE OF THE INSANE EPILEPTIC

By C. T. LA MOURE

OF ROCHESTER, N. Y.

The subject of this article has been suggested to the writer from attempting to overcome the difficulties in caring for this class of unfortunates in a state hospital for the insane where these patients are a source of trouble and anxiety, and where, on account of their small number, satisfactory treatment is impossible.

Institutions have been established for the care of epileptics in seven states of the union during the past twenty years, but in only five states has any special care been provided for the insane epileptic. In Kansas, Texas, Massachusetts and Ohio the sane and insane epileptic are cared for at the same institutions; in Virginia an effort is being made to establish a colony for insane white epileptics in connection with the State Hospital at Lynchburg.

The State of New York was the second state to found a colony for the care of the epileptic, but the law by which the institution was founded states very clearly that no insane epileptic shall be received at the colony and further states that an epileptic becoming insane shall be committed to a state hospital.

At present there are over twelve hundred epileptics housed in the thirteen state hospitals in New York State. These insane epileptics comprise all forms—the mild case with slight mental defect, the demented case, the quarrelsome case, and the disturbed and violent case. Many cases in the interval between seizures are apparently normal mentally.

In four of the state hospitals the epileptics, numbering over three hundred, are scattered about the different wards among the insane who are not epileptic. In nine of the state hospitals, epileptic wards are provided for these patients, but in four of these nine hospitals the wards for epileptics are not of sufficient capacity to house all the epileptics and the result is that over a hundred of this class in these four hospitals are also scattered about among the insane non-epileptic. Therefore, in only five hospitals are the epileptics entirely cared for in separate wards.

In the thirteen New York State Hospitals for the Insane,

there are at the present time 1,268 epileptic patients, 645 men and 623 women. In the nine state hospitals where wards are provided for the epileptics no adequate or satisfactory classification can be made, thus the epileptic with an occasional seizure and who is not demented should not be on the same ward with the untidy demented epileptic or with the noisy or assaultive epileptic. It is commonly acknowledged that this class should have cheerful surroundings and should not be forced to see patients with the disease well advanced. Consider how abhorrent it must be to a non-demented epileptic to be forced to sit at the same table with the untidy epileptic dement or with the disturbed case and to be with this class day and night. On the other hand in the eight hospitals where the epileptics are more or less scattered about on the different wards with the non-epileptic what is the result? It follows that there will be a few cases on almost every ward in the hospital, even on the reception wards. Think of the shock to a nervous patient who has never witnessed a person having a convulsion to be admitted to a state hospital and to suddenly see a patient fall in an epileptic seizure. Thomas Watson, in his work on the "Practice of Physics," says, "There is an occasional cause of epilepsy that deserves to be mentioned, namely, the sight of a person in a fit of that disease. I am not able to verify this statement by any statistics."

At present the non-demented epileptic is forced to be about with the insane patients during the intervals between his attacks when he is relatively clear mentally. The epileptic on the other hand is a very disturbing element on wards with the insane and on account of the small number in each hospital no satisfactory classification appears to be possible. No proper restrictions can be made in the dietary of these patients, as most of them go to the large dining-rooms and are scattered at the different tables with the non-epileptic and of course are provided with the same variety of food; even if an attempt is made to have them sit at tables separate from the non-epileptic and to restrict their diet, it can not be successfully accomplished without much bitter feeling. The epileptic's liberty is also restricted in hospitals for the insane owing to this lack of proper classification. On account of his liability to an attack he is not regularly taken to amusements or industries and is not given regular, suitable and agreeable occupation. He should be under skilled and careful

surveillance by night as well as by day which is hardly possible in a hospital for the insane where there are so few.

Dr. H. M. Pollock, Superintendent of the Norwich Hospital for the Insane, in an article read at the sixth annual meeting of the National Association for the Study of Epilepsy, says, "The plan of distributing the epileptics through wards of the hospital for insane is illogical and unjust. The maniacal epileptic's period of excitement, though furious, is transitory and often during the interim of calm he becomes virtually a normal individual. He consequently feels most keenly his association and condition. The sufferer from a mild degree of mental deterioration has nothing in common with the chronic or convalescent patient with whom he must associate. His convulsions are gazed at with mild wonder by the former and with horror and aversion by the latter. Sympathy and encouragement alike craved are alike denied. Lonely and homesick he wanders aimlessly about or performs mechanically his routine duties. He may be given skilled medical treatment and good care but neither proper training or encouragement are accorded. He soon realizes that he is a custodial case." Dr. Pollock suggests the establishment of colonies for the care and treatment of epileptics in connection with state hospitals for the insane. He says that we may justly maintain that a considerable advancement has been made in the treatment of the majority of forms of mental disease, but for the epileptics as a distinctive group we have in our state hospitals accomplished practically nothing. The objection to Dr. Pollock's plan is that on account of the small number of insane epileptics at each hospital it would be very expensive and the equipment of these small colonies would not be as complete as would be possible if twelve or fifteen hundred of this class were cared for in a separate institution.

Dr. Keniston, of the Connecticut Hospital for the Insane, says, "The care and treatment of insane epileptics demand as much consideration as that of the sane epileptics, if not more, as the former are not only an equal burden on friends or the community in the way of support, but by reason of their super-added mental disorder with its periods of excitement, violence and lessened self-control subject others to perils of life and property."

As so many states have already provided institutions and colonies for their sane epileptics, which have proved of great

benefit to such patients, better results would certainly be obtained if separate institutions were provided for the insane epileptic. It has been found that the man who specializes obtains better results and is more expert than the one who does not specialize, so in the care of the insane epileptic in an institution for the insane epileptic better results would be obtained. How much more freedom the insane epileptic could have in such an institution with proper classification. How much easier to care for them by night as well as by day. The methods of treatment found to be of so much benefit to sane epileptics would be carried out and the writer is sanguine that in a short time excellent results would be apparent. Such an institution should have ample acreage to provide plenty of room for outdoor occupations for the patients. Of course the value of the insane epileptic's labor is not as great as that of the sane epileptic, yet it cannot be doubted that much could be accomplished both for the patient and for the state from the establishment of an institution of this character. The writer is not in favor of having the sane and insane epileptic cared for in the same institution unless separate provision is made for them, and to do this would require a large amount of land and separate institutions at a considerable distance from each other.

It is the purpose of this article to advocate the establishment of a separate state hospital for the care and treatment of the so-called insane epileptic and the transfer of all epileptics from other state hospitals to such state hospital for epileptics. With such arrangement many of the difficulties existing at present will be obviated, and when we consider the large numbers of cases of this type (practically thirteen hundred in the State Hospitals of New York State) affected by this apparent lack of method in their treatment it would seem that the day is not far distant when some such change as that suggested must be undertaken.

Beyond constituting a sufficient population to establish a large institution devoted to the solution of these problems it is further pointed out that if this class was removed from present surroundings the vacancies thus created would provide room for an equal number of a non-epileptic class, thus tending to relieve the overcrowding which now exists. Since it will soon be necessary for the state to establish another institution for the insane the needs for providing for the epileptic class should not be lost sight of in planning for the new institution.

## Society Proceedings

### AMERICAN NEUROLOGICAL ASSOCIATION

THIRTY-FIFTH ANNUAL MEETING, HELD AT NEW YORK CITY, MAY 27-29, 1909

The President, DR. S. WEIR MITCHELL, in the Chair

*(Continued from page 618)*

#### REPORT OF A CASE, WITH EXHIBITION OF PATIENT, OF GUNSHOT WOUND OF THE BRAIN WITHOUT LOCAL SYMPTOMS. PRESENTATION OF A PATIENT EX- HIBITING AN UNUSUAL TYPE OF SYRINGOMYELIA

By Wm. M. Leszynsky, M.D.

Patient was shot in the forehead, the bullet passing through the brain and lodging in the occipital region, followed in a few days by signs of mild meningitis, which rapidly disappeared after operation.

Dr. Angell said he had been particularly interested in the first case as he has been wanting to get an opportunity for some time to find out whether it would be possible to locate a bullet in the brain by stereoscopic arrangement of radiograph negatives as had been suggested by Dr. L. A. Weigel and himself. It would be a very interesting demonstration of the value of the stereoscope. He thought the bullet would probably appear in the plate to be in the middle, or in the posterior portion of the skull shadow.

Dr. M. Allen Starr said there had been some discussion as to the frequency of multiple sclerosis. He would like to say that he thought syringomyelia is a comparatively frequent disease. He saw from eight to ten cases of syringomyelia every year in the clinic of 2,500 to 3,000 cases, he never fails to show four or five every year at the clinic, and the more he carefully examines these cases the more it seems to him a relatively common spinal cord affection. He asked whether this corresponded with the experience of others.

Dr. E. D. Fisher said our clinics are walking hospitals. The patients go from one dispensary to another. He thought that was the real explanation of the supposed increase of syringomyelia.

Dr. H. H. Hoppe thought the frequency of syringomyelia depended upon the location in the country. In the middle west where there is not such a large foreign population syringomyelia is a very rare disease. He does not believe that he has made a positive diagnosis of this disease in the last ten or twelve years in Cincinnati, whereas in seaport towns the disease may be more frequent, because of the large number of foreigners.

Dr. Hugh T. Patrick said that in 1897 he had reported a somewhat similar case to the association. In 1896 Laehr had reported seven cases of syringomyelia with trunk analgesia.

Dr. J. Arthur Booth read a paper with the title: Aneurism of the Left Anterior Cerebral Artery With Rupture Simulating a Brain Tumor. (See this *Journal*, page 528.)

Dr. Charles I. Lambert gave the post-mortem findings.

Dr. C. Eugene Riggs read a paper with the title: Angiosarcoma of the Left Hemisphere.

Dr. Philip Zenner read a paper with the title: Two Cases of Tumor of the Pons. (To be published in this *Journal*.)

### MONGOLIAN IDIOCY

By William N. Bullard, M.D.

Dr. Bullard considered the origin of the name; the class of idiots or feeble-minded denoted by this term; the differentiation of "Mongolian" from other forms of idiocy; symptomatology; pathology.

This was introductory to the exhibition of X-ray plates showing the condition of the bones in these patients.

Dr. L. Pierce Clark said that in a very considerable material of Mongolian idiocy in his service of idiots on Randall's Island he has noticed almost unmistakably the presence of a very small and short little finger. He was surprised that the literature seems to have veered away from this concept. Although he has made no X-ray analysis he was sure such would bear out his contention regarding the presence of bony defect in his own cases. Of course it is well known that similar bony defects in the hands of idiots obtain rather frequently but in such the defects are symmetrical. He desired to know were Dr. Bullard's cases pure Mongolians or were they Malayan or Mongolians. X-ray analysis of the pure types of cases, which are exceedingly rare, might show more osseous deficiencies.

Dr. Bullard said that peculiarities in the shape of the little finger in Mongolian idiots are said to occur, but it has been found that they occur in other feeble minded children. No peculiarity of the little finger has been shown by these radiographs even when the finger clinically seemed to be rather crooked.

In regard to the grade of Mongolian idiots represented, Dr. Bullard would say that they were of the median type, not extreme, except in one or two cases. It is quite possible that if we take the extreme cases we might find greater differences in the structure of the bone and cartilage than we have in these cases.

### A CASE OF SUBCORTICAL AUDITORY APHASIA, WITH DESCRIPTION OF THE ANATOMICAL LESION.

By Albert M. Barrett, M.D.

The paper reports the disturbances of speech in a man who, following an attack of apoplexy, became unable to understand spoken words, and to repeat mechanically. Reading and writing preserved. Spontaneous speech intact, except for a very slight paraphasia.

Post-mortem findings were softening in right and left first and second temporal convolutions. Lesion largely subcortical. Preservation of the cortex of the inner half of the middle part of the left first temporal convolution and the entire root of this convolution.

Dr. Adolf Meyer drew the attention of the members to the fact that within two weeks Liepmann has informed the neurological public that Freund has obtained an autopsy in the case Henschel, and that the subcortical avenues to the auditory center on the left side were found destroyed.

The lack of coincidence of the areas of vascular destruction with the areas marked off by differences of cortical stratification make it difficult to judge how far we should allow ourselves to go in anatomo-clinical correlation. In the present case it also was impossible to make an accurate perimeter examination to determine the effect of the interference with the optic radiations. The reported absence of degeneration in the internal geniculate bodies may well suggest insufficiency of our present methods to show slight alterations. It will take a large number of very clear cases of the auditory as well as the emissive mechanisms to arrive at any sort of reconstructive understanding of speech function. For this series Barrett's case is an excellent addition and most creditably worked up.

Dr. Barrett closing, said he thoroughly appreciated the difficulties in the matter of drawing conclusions. At the same time, some cases, as this one, warrant us in going a little far in drawing inferences which may be helpful as to the localization of certain functions, and all that he had endeavored to call attention to is that certain components of the auditory elements of speech are preserved when certain areas in those regions of the brain anatomically related to the auditory functions are left uninvolved. This is in his case the upper surface of the left first temporal convolution and its continuity with the island of Reil.

He thought one could make another observation regarding the conditions where lesions of both temporal lobes occur, and that is that it is not so much that two sides are involved as it is the manner and extent in which the left first temporal convolution is affected, this region being one we know is concerned with the functions of speech.

#### DIFFERENTIAL DIAGNOSIS BETWEEN THE PSYCHO-NEUROSES NOT ALWAYS NECESSARY

By George L. Walton, M.D.

Great confusion exists in the diagnosis, excepting in sharply defined cases, between manic depressive insanity, hypochondria, hysteria minor, and neurasthenia, with its numerous subdivisions. Study of the textbooks and practical experience show that in very many of these cases we are attempting to distinguish between the undistinguishable.

Dr. Morton Prince said that he thought we could all sympathize with Dr. Walton's point of view so far as it was a protest against collecting a mass of heterogeneous symptoms without analysis and without regard to the pathological processes involved, and then grouping them together as an entity and dumping them into several omnibuses labelled neurasthenia, hypochondriasis, manic depressive insanity, etc. But so far as



Dr. Walton undertook to replace these several omnibuses by a single omnibus labelled psychoneurosis, and to dump all the various psychoneurotic processes into that omnibus, he thought we should refuse to follow him. Dr. Prince thought that to do so would be to go back forty years. Beard had made a great advance when he differentiated from amongst the various symptom-complexes which had been labelled without particular reason "spinal irritation," "spinal congestion," "cerebral congestion," etc., a group of functional disturbances which he distinguished as neurasthenia. Since Beard's time, however, our knowledge of these conditions had become greatly advanced and far more intimate and precise. We had learned to distinguish the various psycho-pathological processes involved in the various psycho-neuroses, and thus we had come to understand to a very large extent the differences in the fundamental processes involved. What we want to do is to differentiate between the processes, to acquire precision of knowledge and not to group together unlike processes, to confuse the phobias, the association processes, the habit processes, the dissociations, the automatisms, the fatigue states, the degenerations, and all the other various pathological processes, and, by dumping everything together, say that we are dealing with only substantially the same thing. Differentiation and precision of knowledge are what we need. Dr. Prince said he was reminded of an old lady in an insane asylum who passed her time sitting on the stairs, wagging her head from side to side and repeating monotonously "Nobody knows, nobody knows, nobody knows." While he did not wish to be flippant it seemed to him that Dr. Walton in his thesis was practically taking the same position maintained by the old lady on the staircase and declaring, "Nobody knows, nobody knows, nobody knows."

Now while unfortunately there is a great deal that nobody knows there is a great deal that we do know. There are numerous students in Europe and this country who, during the past twenty years, have been studying the processes involved in the psychoneuroses and have given us considerable insight into their pathology. We do know a good deal about them and we can, to a very large extent, differentiate in the fundamentals. The difficulty with the classification of neurasthenia, psychasthenia, etc., is that, while they have served a useful purpose, it has been made entirely on clinical grounds and therefore has been based on symptoms. Necessarily it has led, therefore, to an imperfect understanding of the psycho-pathological processes involved. To classify all these various conditions as a single entity called psychoneurosis was to lead to still further confusion. The same method, if applied to the organic diseases, could be followed and while it would lead to simplification it would also lead to confusion and regression in our knowledge. By the same method it would be easy to take the diseases of any organ of the body—of the heart or of the kidneys, for example—and, by showing that the same symptoms individually are found at one time or another in each of these diseases, to maintain that we could not differentiate the several disease processes of the heart or of the kidneys respectively, and accordingly speak of only heart disease or kidney disease.

Such dumping of symptoms into an entity does away with all necessity for diagnosis and recognition of disease processes. Everyone knows that it is not upon the occurrence of individual symptoms but upon the grouping of symptoms that diagnosis depends. To the speaker it seemed very difficult to take seriously Dr. Walton's thesis which appeared to be

that there is no difference between hysteria, chronic depressive insanity, the obsessions, etc., because we find the same individual symptoms occurring in all these different psychoneuroses. What is needed is a classification not based upon symptoms but upon the psycho-physiological processes involved. When we do this we not only differentiate but give precision to our conceptions. If in given cases we will analyse the conditions present and by the various methods at our disposal distinguish the dissociations, the perverted associations, the automatisms such as occur in dementia præcox and in hysteria, the subconscious and fatigue processes, etc., we shall find that we can recognize differences in the psychoneuroses based on distinct psycho-pathological processes, and by doing this our understanding of these psychoneuroses acquires greater precision.

The importance of an intelligent classification rests upon other grounds than that of determining whether a person is dangerous to the community, as Dr. Walton has maintained. Its importance consists in enabling us to determine whether a person can be cured and how to cure him. In severe cases it is very difficult to cure, and sometimes impossible unless we can make a precise diagnosis as to the exact conditions with which we are dealing, unless we can understand what is at the bottom of the whole psychosis. A precise and correct diagnosis, therefore, of the processes with which we are dealing in such cases is essential if we wish to cure our patients. We must know whether we are dealing with the dissociations and automatisms underlying hysteria, or the degenerations and automatisms underlying dementia præcox, or whatever other processes are present in a given case.

To illustrate, the speaker alluded to a case which he had happened to see a few days previously. The patient came to him complaining of insomnia, which had been of a year's duration or longer. He had been sent to a sanatorium where he had stayed for a considerable time without relief. He then had consulted a distinguished New York neurologist who told him that he had neurasthenia and advised him simply to take a vacation. The man took a vacation and returned just as he had from the sanatorium—without any benefit. Undoubtedly if all the symptoms were dumped together as Dr. Walton advocated the case might have been considered as one of neurasthenia or, if a single symptom were taken by itself, as insomnia. But careful psycho-analysis showed that it was neither the one nor the other. It was a case of Angst-neurose. It was a *fear* of insomnia rather than insomnia from which the patient suffered, and the fatigue symptoms were almost nil.

One would be justified in predicting with almost certainty in this particular case that the condition was curable when the correct diagnosis was made and appropriate therapy applied to the exact processes which were before us. On the other hand such a case might stay in a sanatorium for years and pass a good part of his life taking vacations without benefit, unless the actual existing conditions were recognized and logical therapy applied.

The speaker then repeated his statement that the attempt to dump everything into a single psychoneurosis was to go back forty years.

*(To be continued)*

## NEW YORK NEUROLOGICAL SOCIETY

(Continued from p. 625)

*A Study of Poliomyelitis in Massachusetts in 1907 and 1908* reported by Dr. Robert W. Lovett.

The author stated that having been impressed for many years with the severity and appalled by the results left behind by poliomyelitis, he utilized an opportunity that came to him as a member of the Massachusetts State Board of Health, to set on foot an investigation as to the etiology of the disease, which might or might not in the end accomplish something of value. The initiative, however, came from New York and from the committee that had reported at this meeting.

In 1907 it was apparent that more cases than usual of infantile paralysis were being seen at the Boston hospitals, and it was proposed to the Massachusetts State Board of Health that an inquiry be instituted by that Board modeled on the lines of the inquiry already under way in New York. This proposition was favorably regarded, and the results of the first year were so interesting, and the support of the medical profession so unanimous, that it was decided to make the inquiry a continuous one for several years, and to study the behavior of the disease in the same locality year after year, to see if that method would throw any light on its etiology. The pathological and bacteriological part of the work was placed in the hands of Dr. Theobald Smith, Pathologist to the Board, and as the New York reports, as well as others, as to the cerebro-spinal fluid, were negative, it was decided to investigate the gastro-intestinal tract as the possible source of infection. A few stools were obtained in 1907, but in 1908 tin receptacles for the collection of stools were sent to physicians reporting cases, and an assistant to the pathologist was employed for the summer months at the Harvard Medical School. The inquiry in this direction would be further pursued in 1909, but as yet Dr. Smith was not able to report results.

The results of the inquiry for 1907 having already been reported and published, Dr. Lovett said he would not do more than call attention to one or two of the more salient points of that inquiry. In the first place, the answers received showed in many instances a decided lack of information as to anterior poliomyelitis. All sorts of conditions appeared in the answers, and it was necessary to throw out a large number of replies, sifting down to 234 cases of what appeared to be genuine anterior poliomyelitis for the year 1907. In a general way the distribution of cases followed the density of population; where there were the most people, there were the most cases. City and country, highland and lowland, well-to-do and poor seemed affected in about the normal proportion. There was a small epidemic in Pittsfield, spreading up and down along the lines of trolley travel. There was rarely a case in a town or city without one or more cases in adjoining cities or towns. The disease seemed to appear in foci or centers, and to spread from these centers. In 40 cases there were reasons to suspect communication from one case to another; at least, there were points of contact between patients who were affected at about the same time. In some cases the suggestions of communicability were very strong. In 1907 most cases were seen in September, whereas in 1908 the largest number occurred in July. The relation to cerebro-spinal meningitis was of interest, and curves of the two diseases as they occurred in Massachusetts showed that they prevailed at different seasons and that the two curves were complementary to each other. Among the 234

cases there were 35 with a clear account of trauma within one month of the onset of the disease, and the speaker expressed the opinion that trauma, as a possible etiological factor, should not be regarded too lightly. There were eleven deaths in the 234 cases occurring in 1907. In 1908 there were only 129 cases of poliomyelitis reported in the state, and the distribution was wholly different, no longer bearing any relation to the density of population. This seemed to bear out a statement of the Norwegian authors that a district ravaged one year was practically immune for a while. The investigations for 1909 were now under way and cases were already being reported. A blank and a tin retainer for feces were sent at once to the physician reporting the case. In time we might accumulate facts of importance or not, but it was felt that a continued study of the disease must in the end contribute something of value.

Dr. Charles L. Dana said he regarded the report of this committee as one of the best pieces of collaborative work that had been done by a medical organization in this city, and he thought the members should feel grateful and appreciative to those who worked so hard and in such a fraternal spirit in order to bring about this result. The work they did not only added to our knowledge, but had brought together a mass of material which would doubtless cause the attention of the profession to be focused on this very mysterious and serious disease.

While many things could be said in a discussion of the various papers that had been presented, Dr. Dana said he felt that after all it was the impact of all this information on the medical consciousness that would do the real good, by exciting us to further study. The question naturally arose, how should we continue the work in order to bring it to a still more fruitful end? It would not do to stop now, and the point to decide was whether the work should be continued by the committee, or turned over to the city or state health authorities, with whom the committee could cooperate.

Dr. L. Emmett Holt said he had hoped that the proper name for this disease would come up for discussion. Personally, he believed that the term acute poliomyelitis was open to very serious objections. We now looked upon the disease as an acute infection of the cerebro-spinal system, and frequently the meningeal symptoms were very prominent. The lesions, as we now knew, were oft times very diffuse, and he thought it misleading to continue calling this disease by a name which was given to it years ago, when our knowledge regarding it was based upon observations made in its chronic stage, long after the acute symptoms had disappeared. Dr. Holt said he rather preferred the term infantile paralysis, which was employed by Dr. Lovett, but to that he would like to add the word "acute." While the disease was not limited to infancy, he still thought the term acute infantile paralysis was on the whole preferable to anterior poliomyelitis.

Regarding the matter of diagnosis, Dr. Holt said much had been learned by these investigations, and the results showed that many of our old time views regarding the early symptoms of the disease had to be discarded. It was frequently very difficult to recognize the condition early. In collecting data from dispensary cases the early history was often incomplete and unsatisfactory. For that reason we should not conclude that so-called abortive cases were absent or even of rare occurrence during the recent epidemic in this city, as such cases may have existed, doubtless many of them, but were overlooked or miscalled. The very

low mortality that had been given was doubtless due to the fact that a certain number of deaths from acute poliomyelitis had been attributed to other causes, such as acute cerebro-spinal meningitis, or pneumonia, Landry's disease, etc. Even when pneumonia developed late as a complication, the death should still be ascribed to the original disease. He expressed the hope that the tabulated mortality contained in the report of the committee would be revised before publication; otherwise, it might be misleading.

Dr. V. P. Gibney, after complimenting the committee upon the excellence of the work accomplished by it, said he was so pessimistic in regard to the therapeutics of infantile paralysis that he found it very hard to get up much enthusiasm on the subject. He quite agreed with Dr. Dana and others in regard to the desirability and importance of continuing this committee, so that the end results of the epidemic of 1907 and 1908 might be learned, and in the hope that they might throw some light upon the etiology and pathology of the disease.

Dr. M. Allen Starr expressed the hope that the report of this committee, with all the valuable information that it contained, would be put into some permanent form. The fact that Wickman's monograph on the subject was now regarded as a standard work gave us some idea of how acceptable the material collected by this committee would prove to be. He was positive that if the results that had been presented at this meeting were put in book form they would be received with a great deal of interest in many different centers, and it seemed to him to be the duty of the New York Neurological Society to provide for the publication in full of this report. He would certainly be pleased to see a motion to that effect carried. We owed the profession at large and science at large a debt which could be expressed to some extent by the publication in full of this very valuable report.

Dr. Taylor, in discussing the therapeutics of infantile paralysis, had made no mention of the fact brought out by Dr. Harvey Cushing, that urotropin, given by the mouth, will produce formaldehyde in the cerebro-spinal fluid. Since learning this, Dr. Starr said, it had been his rule in all cases of meningitis and spinal cord operations to administer urotropin as a matter of routine, and it seemed to him that whenever we had to deal with an infectious agent in the cerebro-spinal fluid it would be wise to follow this course. Dr. Starr regretted that no mention was made of the fact that examination of the cerebro-spinal fluid from 8 cases made in Flexner's laboratory was negative in every way, no microorganisms having been found.

Dr. Reginald H. Sayre said he could only join the other speakers in expressing his admiration of the excellence of the results of this collective investigation, and to voice the opinion of Dr. Starr that the report should be published *in extenso*.

Speaking of the difficulties of the early diagnosis, to which Dr. Clark had referred, Dr. Sayre said he had met with this difficulty at times in differentiating between infantile paralysis and an acute infection of the joint. He recalled two cases of infantile paralysis which bore a very close resemblance to acute inflammation of the hip-joint, and three or four days elapsed before the differential diagnosis could be made.

Dr. Bolduan, speaking of the apparent low mortality attending the epidemic, said the statistics in regard to this point were very difficult to gather. Infantile paralysis was classified by the Health Department, to-

gether with a number of other diseases of the spinal cord, and in order to collect the 25 deaths in Manhattan Borough that he had reported, it had been necessary to wade through many volumes of death certificates. Undoubtedly there were other deaths from this disease which had been reported not only under the title of encephalitis, but also under other names, and had thus escaped attention. The speaker doubted, however, whether these would have increased the mortality to any considerable extent. Furthermore, the low virulence of the disease in the New York epidemic was borne out by a study of the age distribution of the cases. This showed that the disease affected only those of the most susceptible age period. In the Swedish and Norwegian outbreaks the mortality was high, and corresponding to this a large proportion of adults were attacked. In the New York epidemic the mortality was low and the proportion of adult cases was very small.

Dr. Schwarz said he thought Dr. Holt was correct in his assumption that the tabulated mortality, as given in the report, was too low, and before submitting this feature of the report finally, he expected to write to the various hospitals and have the number of fatal cases verified. He was positive that 25 did not represent the full number of deaths in Manhattan Borough.

Dr. B. Sachs, referring to Dr. Holt's criticism of the name of this disease, said that this question had come up before the committee at various times for discussion. He did not agree with Dr. Holt that it would be wise to drop the term anterior poliomyelitis entirely. The term infantile paralysis had also been used, but more correctly, it was an acute infantile spinal paralysis, and this would necessitate too long a title. In the publication of the report, the disease would probably be called poliomyelitis anterior, and added to this, in brackets, infantile spinal paralysis. While the name anterior poliomyelitis did not wholly agree with the known pathology of the disease, it was parallel, in that respect, to tabes dorsalis, which did not give a very clear conception of the pathology of that disease as it was understood to-day. Wickman had suggested that epidemic anterior poliomyelitis should be called the Heine-Medin disease, in honor of the writers who had contributed so largely to our knowledge of it, but the committee did not approve of this change of title.

## THE NEW YORK PSYCHIATRICAL SOCIETY

MAY 5, 1909

The President, Dr. August Hoch, in the Chair

### SOME CLINICAL VARIETIES OF PERIODIC DRINKING

By Pearce Bailey, M.D.

The speaker first described the true epileptic dipsomania in which the drinking attacks were in reality epileptic equivalents, but he maintained that this form of dipsomania was extremely rare and that the tendency to classify all cases of dipsomania under this heading should be combated. He said many cases of periodic drinking were the results of true mental disease and he mentioned as examples of this class cases of general paresis, manic-depressive insanity and paranoid conditions in

which periodic attacks of drinking bore many of the characteristics of true dipsomania and in which the diagnosis was often very difficult. He stated further that melancholia did not seem to induce outbursts of drinking. He emphasized the interchangeability between the psychic causes and the psychic effects of alcohol. For example, fear, hyperactivity of the sexual instincts, idleness, jealousy all appear both as causes and effects of alcoholism. The speaker especially emphasized the frequency with which periodic sprees began, not from a craving for alcohol, but from a desire for gratification of the sexual instinct. In conclusion, he stated that chronic alcoholism has some right and title to be considered a disease but dipsomania is not so much a disease as it is a disorder of personality and the treatment must be shaped to that end, being individualistic and varying in every patient in accordance with the results of the analysis of him as an individual.

Dr. Meyer said this presentation of dipsomania is the fairest and sanest that exists to his knowledge. It is a very unfortunate thing that physicians are so prone to try for one explanation and to hit upon the explanation by the most unknown quantity that we may have, so far as the interpretation is concerned. Certainly this analysis should relieve us of the effort to explain everything by epilepsy à la Lombroso. Dr. Meyer could give some very interesting instances of the psychasthenic type of sprees, the feeling of inefficiency, of being at a disadvantage, fears, impulses, then drinking, then a spree, winding up in sexual debauch, etc., also seen in the manic-depressive and other types. The great difficulty is the handling of the situation. This is a matter which Dr. Bailey has not brought into his paper, and which therefore, had better not be brought up for discussion.

Dr. Hamilton had been much interested in Dr. Bailey's paper because his views are in accord with those of Kraepelin and his own in regard to the epileptic nature of this kind of episodic drinking, for there is certainly a similarity between certain forms of periodical drinking and masked or psychic epilepsy. In this connection when looking over some of his cases he found something that impressed him as highly significant from a diagnostic point of view—a decided increase in the activity of the pupillary reflex, a tendency to dilatation; this he had seen in many epileptics, and Reynolds and others regard it as quite common. In three alcoholists whose debauches took the form of periodical seizures and were associated with much excitement, it amounted to a true *hippus*. One of these men would disappear for several days and when found there was always retrograde amnesia. In regard to the sexual excesses and perversion referred to by Dr. Bailey, Dr. Hamilton was very familiar with these and with their medico-legal relations, and regrets that they are so often misunderstood. One case was here referred to last year by Dr. Hirsch and seen by them both as well as by others. It was that of a man who was a mild paranoiac but when drunk he would undergo a sexual change. Upon one occasion he committed lust murder, cutting a hole in the abdomen of his victim through which he had connection. In other examples the action of alcohol is to exaggerate existing delusions. In a recent case seen by Dr. Hamilton an individual who though he entertained mild delusions against a former employer based to some extent upon fact and could ordinarily control himself, when excited by liquor shot the other without a word. Upon other occasions there had been hallucinosis, but many thought the crime was one that was due to ordinary drunkenness.

This man was ultimately sent to an asylum where he is now. In addition to the paranoid condition there are pronounced physical signs of chronic alcoholism.

Dr. Dana heartily agreed with all he had heard of Dr. Bailey's paper. He should think from the sentiments he heard him express that his paper will be of help in counteracting somewhat the formal cry which is always put forth about inebriety—that it is “a disease,” as though it was something like rheumatism or a broken leg or something quite beyond the person's help. For although inebriety may be called a disease, in a certain sense, it is often a condition in which the individual is somewhat at fault and has a certain responsibility. While Dr. Dana agreed with the statements that he makes about the psychogenic factors, he thought we must also remember that sometimes this psychogenic factor of the psychosis is the habitual use of alcohol; that is to say it happens that young men gradually get into the habit of drinking excessively, it is first only a careless habit, but after a time it becomes a distinct case of inebriety in which there come upon them distressing compulsions and impulsions. He recollected a case in which a young man had indulged in alcohol for some time, he finally stopped for he was a very intelligent man, a lawyer, as he saw the injury he was doing himself. After that he used to have come upon him periodically in certain environments *e. g.*, when he went into the subway, states of the most horrible depression which would last for one or two hours; these depressions were promptly relieved by drink, and it was with great difficulty that he refrained from going into excesses as the result of these craving depressions. If he had not fought his inclinations, he would have become a periodical drinker, but by the exertion of his will he managed to save himself. In that case the psychogenetic factor of the psychosis was really the alcohol that he used first simply as a social habit.

Dr. Kirby said that in hospital practice an important group of cases shows the relation of some forms of periodical drinking in the manic-depressive constitution. Many of these cases have been called dipsomania, but as Dr. Bailey has said, they are to be differentiated from true dipsomania with epileptoid features. One observation made by Dr. Bailey is a surprise to Dr. Kirby, viz., that a rigid pupil is of common occurrence in alcoholic psychoses. A non-reactive pupil associated with absent knee jerk, as found in one of the cases reported, would certainly raise the question of the presence of a metasymphilitic disorder and necessitate a lumbar puncture. He had rarely observed in alcoholic cases a rigid pupil that could not be explained on ground of some local eye condition. Even in Korsakoff's psychosis where the damage to the nervous system is most severe, we do not find any impairment of the pupillary reflex. Inactivity of the pupil has of course been reported in epileptic and hysterical attacks as a transitory symptom.

Dr. Bailey replied that in regard to what Dr. Kirby says the question of immobile pupils and absent knee jerks first occurred to him about two years ago in the person of a patient who had been markedly alcoholic all his life and was taken with rather atypical symptoms of neuritis, atypical in that the muscles involved were of the thigh and not the lower leg. This man had stiff pupils. His condition was such that they were unable to get a satisfactory history, and the question balanced itself between alcohol and syphilis. It was for a long time in doubt. They looked up the question to see if there were any precedents and found that Kraepelin



had mentioned stiff pupil in alcoholism in his book. Bonhoeffer also mentions it. Dr. Bailey did not advance it as a frequent symptom in such cases, but where there is a question between alcoholism and paresis, the fact that the pupil is stiff and knee jerks absent is not always final evidence of paresis. That case certainly was not paresis. His pupils now respond to light. In one case he referred to in his paper the pupils and knee jerks both returned within a few weeks after cutting off alcohol.

Dr. Bailey was very much interested in Dr. Brooks having found a case of true melancholia with spasmodic periods of drinking. He had doubted this form of dipsomania and he should like to ask some of the gentlemen with a much larger experience than he had had what their experience is. Is it common for the melancholia states of manic depressive insanity to have periodic drinking spells? He stated in his paper it was not, and he did not wish to state so if it is otherwise. He had never had a case of melancholia with any tendency to excessive drinking at all, except some cases of melancholia in old people when they settled down into mild dementia.

Dr. Dana asked Dr. Bailey in this case where he found rigid pupil, whether there were not symptoms of syphilis, and whether an examination of the pupils in epileptiform attacks was made.

Dr. Bailey replied there were simply evidences of peripheral neuritis. He had only seen one case and in that as he remembered the pupils responded promptly.

Dr. August Hoch read a paper with the title: Contribution to the Etiology of Manic-Depressive Insanity.

# Periscope

Monatsschrift für Psychiatrie, und Neurologie

(Bd. 21. Heft, 1-6)

1. The Clinical Manifestations and Pathogenesis of Hysterical Dismegalopsia. FISCHER.
2. The Memory Disturbance in Korsakoff's Psychosis. GREGOR.
3. The Prognostic Value of the Argyll-Robertson Pupil. PILCZ.
4. Contribution to the Study of Apraxia. HARTMAN.
5. *Cysticercus Cellulosæ* With Special Reference to the Capsule of the Parasite. JACOBSON.
6. Obsessive Ideas, Their Foundation and Definition. FRIEDMANN.
7. Rhythmic Muscular Twitchings Synchronous with the Pulse in General Paralysis. FISCHER.
8. Transitory Alcohol Psychoses. CHOTZEN.
9. Degenerative Eccentric Personalities. BIRNEAU.
10. The Psycho-Galvanic Reflex Phenomenon. VERAGUTH.
11. A Contribution to the Pathological Anatomy of Idiocy. TAKASU.
12. Osteomalacia and the So-called Osteomalacial Paralysis. VÖLSCH.
13. Neuralgia in Melancholia. BRUNS.
14. Paroxysmal Febrile Reactions in General Paralysis With Increase of the Polynuclear Leucocytes in the Blood and Spinal Fluid. PAP-PENHEIM.
15. Trauma in the Etiology of Nervous Diseases. MENDEL.

1. *Hysterical Dismegalopsia*.—The author gives the clinical histories of two cases, goes into a lengthy theoretical discussion and introduces an anatomico-physiological schema. He concludes that we can distinguish two kinds of nervous dysmegalopsia. The one caused by a disturbance in the corresponding projection centers follows anatomico-physiological laws completely and through analogy with Wernicke's schema is best designated as "cortical dysmegalopsia." The other type, caused by transcortical psychic disturbances, allows no anatomico-physiological correlation and is called "transcortical dysmegalopsia." In both of these types the perception of objects can be disturbed in a similar manner, but in the cortical variety the hallucinations are not dysmegaloptic, while the reverse is true of the transcortical form.

2. *Memory Disturbance in Korsakoff's Psychosis*.—In this extensive experimental study the following method was used: The patient was required to learn words in series of different lengths, and after a definite space of time he was tested to see if he could again learn the same series with fewer repetitions than were necessary for the first learning. Evidences of a reproductive ability could be demonstrated. This was strongest for series of coherent words—verse and prose—less marked for unconnected words and weakest for meaningless words. The strength of the reproductive ability increased each time the subject was relearned. These partial memory exercises led to a real increase in the mental capacity, not merely the use of "special memories." In contrast to the

normal, it appeared that frequent repetitions within a short time were more effective than the same number of repetitions spread over a longer period. The subject matter was learned more readily if divided into parts. In production the errors consisted in omissions and in giving false words. Analysis of the associations retained after only one reading yielded according to the time of their disappearance, a curve showing at the beginning a sharp decline, then a more gradual fall. Some tenacious associations were formed; a strong perseveration of failure was also noted. The recognition of what was previously read depended on the time interval and the number of readings.

There was no parallelism between the disturbance in the power of recognition and the impairment in the reproductive ability. The patient with relatively bad retention did decidedly better in the recognition tests.

As a contribution to the psychopathology of Korsakoff's psychosis, the author thinks his work demonstrates that these patients have a latent capacity for forming new associations, and shows that the conditions for success in learning are attentive following of impressions and frequent repetition of the same. The practical therapeutic value of such exercises is evident.

3. *Argyll-Robertson Pupil*.—The writer believes that the Argyll-Robertson pupil is not pathognomonic for tabes or general paresis. He cites observers who have reported its occurrence in alcoholism, syphilis and periodic psychoses. Most writers deny its appearance in neurasthenia. The author reports seven cases diagnosed as neurasthenia that showed a partial or complete Argyll-Robertson pupil, either transitorily or permanently. Four of these must, however, for various reasons be excluded. In the three remaining cases the observation extended over two or three years.

In two patients the pupil showed only a sluggish reaction to light, which later cleared up. In the third case a typical Argyll-Robertson pupil was found at one examination, but eight days later the pupillary reaction was normal. The patient remains well after three years.

The chances for error in the examination are too great to make such an observation of special value. No lumbar puncture was performed in any of the cases reported.

4. *Apraxia*.—The rôle played by the right and left frontal lobes in motor activity, and the relation of the corpus callosum to apractic disorders are discussed. Three well observed cases with serial sections of the brains are reported (two brain tumors and one case of cerebral hemorrhage). A not yet well defined portion of the frontal lobe stands in the same functional relation to the leg-arm area of the central convolutions as the Broca field does to the articulatory (lip-tongue) zone of the central convolutions. For excitation of motor activity through the different sensory spheres it is necessary to have coöperation of the frontal lobe for transfer of impulses to the focal fields of the central convolutions.

Abolition of function of the left frontal lobe results in total apraxia of the opposite extremities. The right frontal lobe needs the coöperation of the left side of the brain and connection with the opposite sensory spheres for the execution of purposive movements. If the function of the left frontal lobe alone is abolished, then the difficulty is chiefly in a loss of motor memories necessary for the execution of left-sided movements. If most of the callosal connection between the two sides

of the brain is lost, the result is a conduction apraxia of the left side, with retention of the memories for motions.

When the left hemisphere functionates alone only an increased control of the activities is needed by the special senses, but the right hemisphere acting alone leads only to apractic movements; complicated movements requiring bilateral muscular coöperation depend on the integrity of the interhemispherical connections. Defect in the right frontal lobe results in symptoms of partial conduction-apraxia of the left side with retention of motor memories.

5. *Cysticercus Cellulosa*.—The author claims that many of his preparations show that the capsule enclosing the cysticercus is the altered wall of a small blood vessel into which the parasite has been driven. The vessel may be either an arterial or venous twig. The parasite in embryonic condition can pass through the capillaries of the brain or lung.

6. *Obsessive Ideas*.—This article is an extensive discussion of obsessions with the object of better defining and circumscribing the symptom. Clinical and etiological problems are not included in the study. The author's definition is as follows: "Obsessive ideas are strongly emphasized non-suppressible ideas remaining isolated in thought, being felt as an obstruction and having no logically reasonable value." According to genetic form, the following divisions are possible: (1) A simple form where the obsessive idea develops after some disturbing incident; the anxious mood acting on the imagination arouses persistent fears which cannot at the time be overcome. (2) In periodic cyclothymic attacks the depressed mood and lack of decision in thought predisposes to development of doubts and tormenting ideas which cannot be overcome by reasoning. (3) Persons of a peculiar make-up, constitutionally deficient in positiveness and decisiveness in thought and action, are prone to develop obsessions. The most frequent examples are found in neurasthenic and other neuropathic individuals. In acute nervous exhaustion obsessive ideas may be present for a time. (4) In the degenerate types of personality obsessions may be prominent throughout the life of the individual. Without signs of any strong affect the individual is continuously concerned with puzzling over trifles and fanciful ruminations.

7. *Rhythmic Muscular Twitchings Synchronous With the Pulse in General Paralysis*.—In 1895 Kemmler made the observation which the writer now disputes. The latter finds that the pulse and muscular jerking are not really synchronous and that they both have an independent rhythm. In some cases the frequency of the pulse wave is nearly the same as the muscular twitchings and in some instances there may be a synchronicity, but even so, with the independence of the heart of the motor centers, the independence of the rhythm must be acknowledged.

8. *Transitory Alcoholic Psychoses*.—In the cases reported, the psychosis lasted only a few days and was characterized by a severe clouding of the sensorium, followed by amnesia. Hysterical and epileptoid features can be recognized, and according to the prominence of certain symptoms, one may speak of delirious, expansive, depressive or motor forms. The psychoses under consideration resemble very much in onset, and symptomatology, the so-called "pathological intoxication," but they are of longer duration, lasting several days, whereas the pathological intoxication lasts only a few hours. The psychoses develop on the basis of a neuropathic or psychopathic constitution.

9. *Degenerative Eccentric Personalities*.—Under this designation the

author refers to a group of psychopathic individuals showing prominently in their make-up a paranoid attitude. A fundamental disharmony is revealed in the distorted relation between the emotions and the other sides of the mental life. In certain directions the individual may be unusually well endowed. The characteristic features are feebleness of judgment, an exaggerated feeling of self-importance, expansive ideas, and a feeling of being imposed upon or misunderstood. Under unfavorable circumstances (such an imprisonment) there is a rapid development of paranoid delusions, more or less systematized, but usually not lasting for any length of time. These cases differ from dementia præcox in that they do not show the prodromal changes in mood, prominent hallucinations or progressive course.

10. *The Psycho-Galvanic Reflex Phenomenon*.—Results of experiments with twenty-seven healthy persons are given by the author, who has been a pioneer investigator in this field. The galvanometric oscillations are due to a variation in the intensity of an electric current originating, at least partially, outside of the body from a source included in the circuit. The variation in the resistance of the body, against this exogenous current, plays a rôle in the variation of the current intensity. The variation occurs in the direction of a decrease in the current intensity when a person in the circuit remains quiet for a long time. The variation runs in the direction of an increase in current intensity when the person in the circuit is subjected to stimuli acting on the peripheral sense organs or through excitation of the higher perceptive speech field; on the other hand, the stimuli can be of an autochthonous (or intra-psychic) origin. With sensory stimuli a psychic component is assumed to be necessary for the appearance of the psycho-galvanic reflex. Thus, the reaction to auditory stimulation is elective, as it distinguishes those acoustic stimuli which arouse the attention of the individual. Likewise with higher psychic stimuli, the reaction is elective in that a quantitative difference exists between the response to stimuli having an emotional value, and those which do not.

The strength of the reaction is determined not alone by the feeling tone, but also by the actuality of the psychic stimuli. The galvanic phenomenon expresses a variation in current intensity, and this, according to Ohm's Law, is directly proportional to the electromotive force and inversely proportional to the resistance.

Further investigation as to the nature of the psycho-galvanic reflex will have to do with the problems of the resistance of the human body, determination of the source of the electromotive forces *in* or *on* the body, which vary under stimulation and finally demonstration of the anatomical substratum for the centrifugal reflex arc as far as the electrodes.

11. *Pathological Anatomy of Idiocy*.—A detailed clinical and anatomical report on two cases of idiocy is given. In one case, with Little's disease, there were found sclerotic atrophy of the frontal cortex and smallness of the pyramidal tracts. In the other case, with epileptiform seizures, the findings were, under development of the frontal cortex, several gliomata on both sides of the corpora striata and multiple gliosis in the marrow. The histological changes are discussed. The author was not able to find a previous report of a case with tumors symmetrically placed on both sides of the corpora striata.

12. *Osteomalacia*.—This article comprises a long discussion of individual clinical symptoms, with special reference to the signs of psoas weak-

ness. The two cases observed by the author are still living. The writer concludes that "osteomalacial paralysis," a symptom-complex consisting of pain, waddling gait, psoas weakness, hindrance in abduction, etc., is characteristic in the beginning for many cases of osteomalacia, and these symptoms allow the diagnosis to be made with probability before bone deformities appear. The motor symptoms have a mechanical basis and are not to be explained as a neuropathic or primary myopathic disorder. The severe progressive osteomalacia is sometimes, at least, accompanied by marked changes in the muscles, but we know nothing of the genesis or nature of these alterations.

13. *Neuralgia in Melancholia*.—The neuralgic symptoms are reported in a heterogenous group of depressions—hystericals, manic-depressives and involuntional melancholias. In none of the cases were the cardinal symptoms of a "true" neuralgia present—pain occurring in attacks, a peripheral nerve distribution and sensitiveness over points of exit. The writer concludes that the symptoms are those of a "pseudo-neuralgia" and a number of hypothetical explanations are discussed.

14. *Paroxysmal Febrile Reactions in General Paralysis*.—The author's work shows that there are attacks of temperature elevation in general paralysis accompanied by increase of the polynuclear cells in the blood and in the spinal fluid. A similar increase is frequently noted during the convulsive seizures, during attacks with focal symptoms and in states of mental excitement. All these manifestations are the result of a sudden increase of the toxine affecting the entire body. A considerable increase in the percentage of the polynuclear leucocytes in the spinal fluid is a sign of the overwhelming influence of the toxine. During intervals free from these exacerbations the polynuclear elements in the spinal fluid are scanty.

15. *Trauma in the Etiology of Nervous Diseases*.—The author promises a series of articles, based on analysis of 1,500 cases, to show the rôle of accident and injury in the causation of various nervous affections. The present contribution is a discussion of the relation of general paralysis to trauma, and is essentially a statistical study dealing mainly with anamnestic data; questions of histopathological diagnoses are not considered. Twenty-one cases are reported briefly. The conclusions are as follows: A trauma can, in presence of a predisposition (heredity inherited or acquired syphilis), elicit general paralysis; it can influence unfavorably an existing general paralysis and hasten the deterioration; it can lower the resistance of the brain and render it more liable to react later on to harmful influences, particularly syphilis. A trauma alone cannot, however, elicit general paralysis in a perfectly healthy undamaged brain. Experiments on animals and injuries to human beings may be followed by a symptom-complex very similar to, but not identical with, general paralysis.

G. H. KIRBY (Ward's Island).

### Journal de Psychologie Normale et Pathologique

(Fifth Year, No. 6. November–December, 1908)

1. The Loss of the Appreciation of Value in Mental Depression. P. JANET.
2. The Anurias of Nervous Origin. JULES JANET.
3. Sensory Transpositions in Literary Language. G. DROMARD.
4. Instability of the Feelings. R. MEUNIER.

1. *Loss of Appreciation of Value.*—This is the report of a neuro-pathic girl, twenty-three years of age, born of highly neuropathic parentage, who, after a period of nervous strain and a severe psychic shock, became listless and apathetic and developed a number of curious mental manifestations. In the first place she lost the conception of the flight of time. This was not of the nature of a true amnesia. Then there arose an intense self-distrust, with considerable indelicacy of thought and action. She finally concluded that everything within and about herself, her hair, her figure, her person, her garments, were all changed. Her affections, emotions and volition were abolished. She would examine her own sister for hours, most minutely, doubting all the time whether she were not some other woman. All of her doubts applied, however, only to objects and incidents that preceded the illness from which her disordered mentality seems to have arisen. She had no difficulty about objects seen for the first time since her illness. Along with this *folie de doute* appeared the striking symptom of belittling and undervaluing everything that formerly she appreciated and, as a clever and bright business girl, had known how to value correctly. The only sensory disturbance she manifested was a diminution of the sense of olfaction.

Janet suggests that an explanation of this trouble should be sought for along lines of mental activity, or in a study of the various degrees of tension which this activity is able to assume. Here the feeling of incompleteness is more particularly related to the disturbances of volition and attention rather than to the disturbances of sensibility.

2. *The Anurias of Nervous Origin.*—The author reports two cases of anuria, one of which followed a violent shock without any apparent lesion, and the other a harmless injection of nitrate of silver in the posterior urethra. A subconscious inhibition, a hysteroid condition, is the author's explanation of the phenomenon. He further states that he believes our organs have a sort of consciousness which is, as it were, personal to them, and which regulates, in some kind of a way, their own particular lives. They each have their memories, their association of ideas, their dread of pain. At all events, it is hoped by Janet that these two cases may demonstrate that there are instances of anuria more amenable to psychic than to surgical treatment.

3. *Sensory Transposition in Literary Language.*—As everybody knows, much of the beauty of poetical language depends, when describing the phenomena of one sense, upon the employment of the ideas and terminology of another sense. For example, we say metaphorically that red possesses a warm tone. Such transpositions are readily explained by psychological analysis. In his long and aptly illustrated article, Dromard seeks to prove that they are due to *subconscious associations* or to *emotional equivalency*. In their analysis they lead us back to the lowest and most primitive states of consciousness where there is found a simplicity and unity of perception and feeling, such as belong only to the most elemental forms of life; but such as have become sharply differentiated in the higher forms.

4. *Instability of the Feelings.*—The case elaborately reported by Meunier is that of a neurasthenic girl, devoid of hysterical stigmata, who made improper advances to various men, even travelling long distances by rail and undergoing much hardship to be with them, while at the same time she continued faithful to her first lover in spite of the importunities of these men. In his psychological analysis of the case, the

author invokes the well-known feebleness of attention and weakness of will power observed among neurasthenics; also their sense of ennui and monotony of existence, with their exalted emotional automatism induced by a constant stream of mental visions of the ideally beautiful. The case reported suffered from a sort of nostalgia every time she pursued a new lover, which was accompanied by a general trembling, heightened emotionalism and nervous restlessness, which Meunier likened to the phenomena of claustrophobia, the feeling of restraint and compulsion with an overwhelming desire to be free. This, he says, saved the girl each time and sent her back true to her first partner. In the words of the author, one of the most complex things in the psychology of love—and one whose social consequences may be most serious and far reaching—is this sentimental instability of certain individuals. Physicians, sociologists and moralists should study the subject more exhaustively along psychological lines.

METTLER (Chicago)

### Journal of Mental Science

(Vol. LIII, No. 220)

1. The Pathological Anatomy and Pathology of Epilepsy. TURNER.
2. Amentia and Dementia; a Clinico-Pathological Study. BOLTON.
3. On the Formation of Character; an Address to the Nursing Staff at the Retreat, York. BEVAN-LEWIS.
4. On the Localization of Cerebral Function. CAMPBELL.

1. *The Pathological Anatomy and Pathology of Epilepsy.*—The opinion of the author of this paper is based upon the microscopical examination of the central nervous system in forty-one cases of "idiopathic epilepsy." He concludes that epilepsy is a disease occurring in persons with a defect of the nervous system, either congenital or involutional, in whom there is an abnormal tendency to intravascular clotting, and that the fits, whether of the nature of grand mal or petit mal, owe their exciting cause to sudden stasis of the blood stream (generally limited) portion of the cortex, resulting from the blocking of the cerebral cortical vessels by these aforementioned intravascular clots. A table is given in which the various epileptic types are classified as weak-minded, high grade imbeciles, low grade imbeciles, and idiots. He states that the incidence of the pathological changes are the same for the various classes. As a criterion for imperfect development of the Betz cells of the cortex he gives the "axonal reaction," but from the tables spoken of, this reaction occurred in only sixty per cent. of the cases examined, together with sclerosis and atrophy. Aside from a notable absence of this reaction in so large a number of his cases examined, it is to be doubted if the presence of axonal reaction in the Betz cells is a proper criterion by which to judge defective or imperfect development of the nervous system. Those who have described this pathological condition look upon it as the result of a terminal affection in a certain class of cases, and these changes are associated with a definite symptom-complex.

Adolf Meyer grouped these cases under the term "Central Neuritis," which is a name used to describe "Parenchymatous System Degeneration, mainly in the Central Nervous System," and other observers have corroborated his findings, both as regards the clinical picture and anatomical



changes. In view of the generally accepted opinion regarding the "axonal reaction," it appears a grave error to consider this reaction as an indication of defective nervous system development. The axonal reaction is found very rarely in autopsies in the insane hospitals in this country, and if it were an indication of defective development it surely would be found more often than it is. A rather lengthy, detailed account of the microscopical findings is given to each case, and it is to be regretted that no adequate clinical summaries are available. If the author's deductions are made entirely from the material given in his meagre clinical summaries, it would seem that the cases examined were anything but idiopathic epilepsy.

A great many cases have rather important complications, such as paralysis, "inability to walk," "deaf mutes," and "infantile paralysis." In the case of one woman fits developed at the age of forty-nine; other cases had fits only a few years after infancy. So it is hard to reconcile the findings based upon the examination of this heterogeneous group of cases, and based upon the facts upon the pathological anatomy of idiopathic epilepsy. One is surprised that the author did not find any "considerable" increase in the neuroglia elements, and he states that no special neuroglia stains were used. He neglects to mention the work of Alzheimer on epilepsy, also the ameboid glia found by Alzheimer in epilepsy, and considered pathognomonic of epilepsy of certain forms.

The author's descriptions of sclerosis and atrophy are vague and misleading and his statements regarding these findings are often contradictory. In describing more in detail the "axonal reaction" as an indication of defective development of the brain, the author states that he found this change present in 106 out of 303 cases of insanity, or 35 per cent., a figure that does not agree with the findings of those who have reported this condition. One is forced to raise the question whether he has described the typical axonal reaction as understood by observers in this country. The most important changes that are found in the blood vessels consist of intravascular clotting (ante-mortem), distention and hemorrhages of vessels in the surrounding tissues. The thrombi, by plugging up the vessels, cut off the nourishment to parts supplied by these capillaries, and thereby cause convulsions and the resulting sclerosis. Although he seldom found intravascular clotting in cases dying in status epilepticus, he states that this fact proves that fits do not cause intravascular clotting, although the facts argue against the view that intravascular clotting causes the convulsion.

An addendum to this paper treats of the coagulation time of the blood in epileptics, and the author is of the opinion that the coagulation time is much lessened, but his tables giving results of this work are not convincing. Altogether, one is not impressed with the author's theory or basis for his conclusions.

2. *Amentia and Dementia*.—(Continued article.)

3. *On the Formation of Character*.—An address to the nursing staff of the York Retreat, full of good advice for nurses.

4. *Localization of Cerebral Function*.—In this article Dr. Campbell takes issue with Dr. Bolton who has criticised the former, apparently unjustly, and defends his position. The controversy not only concerns opinions in regard to cerebral localization, but as to methods employed.

COTTON.

## American Journal of Insanity

(VI. LXV, No. 3)

1. An Investigation into the Merits of Thyroidectomy and Thyro-Lecithin in the Treatment of Catatonia. H. J. BERKLEY and R. H. FOLLIS.
2. The Knee Jerk in Paresis. S. I. FRANZ.
3. A Consideration of the Need for Better Provision for the Treatment of Mental Disease in its Early Stage. J. MONTGOMERY MOSHER.
4. Traumatic Amnesia; a Case of Medico-Legal Interest. W. W. RICHARDSON.
5. Imbecile, Criminal, or Both? C. W. HITCHCOCK.
6. Alcoholic Psychoses. JAMES M. KENISTON.
7. Neuropathic Wards in General Hospitals. CAMPBELL MEYERS.

1. *Thyroidectomy and Thyro-Lecithin in Treatment of Catatonia.*—Starting out from the idea that catatonia is due to some sort of an auto-intoxication, probably from perversion of an internal secretion, one of the authors (Dr. Berkley) had for several years been attempting to favorably influence the condition of patients suffering from this disease, using for this purpose a great array of drugs. The only one of these which seemed to have the slightest effect was iodine, and this rather intensified the symptoms. Comparing the symptoms of catatonia with those of Graves's disease he thought he could detect some points of resemblance between the two and concluded that in catatonia perversion of function of the thyroid gland might be the causative element. Having found in some previous investigations that lecithin was a powerful agent in promoting constructive metamorphosis, he finally decided upon the administration of desiccated thyroid in doses of from one to two grains a day for one week, followed by lecithin in alcoholic solution for one week, and so on in alternation. At the same time he gave full diet, with large quantities of milk. Of four cases subjected to this treatment two have made an apparent recovery, one got well but relapsed later, and a fourth case, which was of a year's standing made but slight improvement. Becoming convinced that while possessing a distinct field of usefulness in early cases, the thyroid-lecithin treatment offered little hope in those more advanced, four cases were selected from the material at the Baltimore Detention Hospital, and were operated upon by Dr. Follis, partial thyroidectomy being performed. Of these cases two were males and two females. Their ages were respectively 19 (2 cases), 21 and 28 years. The disease had existed prior to the operation as far as could be determined, about four months (in two cases), about eight months and about 22 months. All improved after operation and eventually made what appears to be a complete recovery. Encouraged by these results three patients were selected from the Maryland Second Hospital for the Insane and subjected to the same operation. Each of these patients had been insane for a year or more and no permanent improvement was obtained. Another case, a man of 25 years, from the Sheppard and Pratt Asylum, in whom the disease had been present somewhat more than four months, was also operated upon and has made an apparent recovery. The portions of glands removed showed some slight pathological changes, mainly in the way of increase of colloid and of connective tissue, but nothing very definite.

The authors conclude that: (1) The number of cases so far thyroid-

ectomized is too few to justify the drawing of definite conclusions. (2) The results of histological and chemical examinations are inconclusive as determining whether in catatonia there is a perversion of the secretion of the thyroid gland or not. (3) The return to a natural state of the reflexes, the decrease of mechanical muscular irritability of dermatographia, loss of pigmentation and of the doughy pasty character of the skin and later return to the normal of both mental and physical states, at least suggest that the partial ablation of the gland has something to do with the rapid recovery. (4) It is possible that the secretion of the parathyroids neutralizes that of the thyroid and that this is aided by removal of part of the larger gland. (5) It would be difficult to find eight successive cases which progressed so favorably. In one case a rise and fall of mental and motor symptoms was noticed as the remaining half of the gland hypertrophied later decreased in volume again. (6) The partial ablation of the thyroid gland may produce unknown changes in metabolism induced, first by relatively high leucocytosis after the operation, equally with a withdrawal from the circulation of a portion of the thyroid hormone which is known to induce destructive metamorphosis. In those patients who recovered a marked change in nutrition, followed by a great gain in weight was noticed. (7) They do not think that chance could have favored their selection of eight successive favorable cases. (8) The thyro-lecithin treatment is productive of constant results only in the prodromal stage. It acts probably by promoting constructive metabolism, but may also neutralize the thyroid hormone. (9) Partial thyroidectomy can only be of avail before the production of organic changes in the brain. (10) The operation is not devoid of danger and should only be undertaken by a surgeon familiar with operations upon the thyroid and able to judge how much of the gland to remove.

The authors give many details which cannot be entered into here.

2. *Knee-Jerk in Paresis*.—The author calls attention to the fact that in asylum records the data with regard to the condition of the reflexes are often not very definite. He then gives the results of his analysis of a number of statistics with regard to the character of the knee-jerk and its association with other symptoms in general paresis, and presents some curves and other data obtained by the examination of eight patients in the Government Hospital, by the graphic method. His conclusions are as follows: (1) In over four thousand patients the percentages of knee-jerks of different character are as follows: normal 24.6, exaggerated 47.3, diminished and absent 28.1. (2) The antagonistic muscular action following the knee-jerk is greater than the agonistic action. (3) In many cases of paresis the knee-jerk is clonic in character. (4) The time of the knee-jerk, *i. e.*, the continuation of the muscular contraction, is from 0.1 to 0.6 second. (5) The average latent period of exaggerated knee-jerks in paresis is slightly longer than in normal individuals. (6) The average latent periods in conditions of exaggeration and diminution do not appreciably differ. (7) There is often a difference in the latent period of the knee-jerk of the two legs of a subject, which is not distinguishable clinically, and which is not yet correlated with other functional or with structural changes in the nervous system. (8) Fifteen per cent. of the patients that were examined showed ankle clonus in one or both legs. (9) Ankle clonus was not found associated with normal or absent knee-jerks. (10) No special relation was discovered between the condition of the plantar reflexes and the knee-jerks, although with normal

knee-jerks the plantar was never diminished or absent. (11) There is a decided correlation between Argyll-Robertson pupils and absent knee-jerks. There is also decided negative correlation between the alternation of pupillary reactions and normal knee-jerk, in that the pupillary abnormalities are less often found associated with normal knee-jerks. (12) There is no relation between the character of the knee-jerk and the mental symptoms, although a relation has previously been reported by at least two other investigators. (13) It appears that on entrance to a hospital the expected duration of life of parietic individuals with absent knee-jerks is about thirteen months; that of patients with diminished knee-jerks is about nineteen months; and that of patients with exaggerated or normal knee-jerks about twenty months.

3. *Treatment of Mental Disease in its Early Stage*.—An exposition of the importance of proper treatment of cases of insanity in their early stages, with a plea for the provision for such treatment in connection with general hospitals, a short account of what has been done in this connection at the Albany Hospital, and a résumé of the recent amendment of the Insanity Law of New York so as to permit the superintendents of insane hospitals to receive temporarily without legal formalities, as voluntary patients, persons who need immediate treatment for their mental condition or are apprehensive concerning it.

4. *Traumatic Amnesia*.—An account of the case of Endrukut, who shot a woman with whom he was in love, afterward lodging a bullet in his own brain, and who was acquitted of the murder upon the ground that having suffered a complete amnesia from the brain trauma he was "without sufficient knowledge and memory of the facts and circumstances attending the alleged crime to make a defense thereto," hence was "a lunatic and mentally incompetent to advise with counsel and prepare his defense." These points being included in the charge of the court, the jury found the prisoner guilty of murder but "now a lunatic." After spending two months in prison he was sent to Norristown, where the physicians found themselves unable to fit his case in with any heretofore described type of traumatic insanity, but considered him a mentally alert and rather unusually intelligent patient, while his general health remained good. It was at no time claimed that he was insane prior to committing the crime. The author thinks that the establishment of traumatic amnesia as a defense for crime may constitute a dangerous precedent.

5. *Imbecile, Criminal or Both*.—Description of the case of a man of 22 years of age, who, commencing his criminal career at 5 years of age, had up to date been arrested no less than 41 times. The writer hardly regards this man as an imbecile, but suggests that he may be one of the "demi fous" of Grasset.

6. *Alcoholic Psychoses*.—The author gives some statistics from the Connecticut Hospital for the Insane based upon 3,893 admissions, which show that the percentage of alcoholics has increased from 9.41 in 1898-1899, to 14.46 in 1906-1907, and investigating the conditions in a number of other New England institutions he finds the same steady increase. Taking this as a text he discussed the rôle of alcohol in the production of insanity and makes some pertinent suggestions as to the combating of the drink evil.

7. *Neuropathic Wards*.—Alluding to the difficulty of getting patients upon the borderline or in the early stages of insanity to go to an asylum, the author makes a plea for suitable accommodation for such cases in

general hospitals and tells about the wards for these patients in the Toronto General Hospital. He feels that we must look as far as possible to the general hospital for the prophylaxis of the acute insanities.

C. L. ALLEN (Los Angeles).

### Allgemeine Zeitschrift für Psychiatrie

(Band LXVI, Heft 2)

1. Osteomalacia in Insanity. A. BARBO.
2. The Clinical Meaning of "Physical Persecutory Delusions." DR. HERMANN.
3. The Psychopathology and Clinical Position of Imperative Conditions. N. SKLIAR.
4. Have Isolating Rooms Become Superfluous in the Modern Treatment of the Insane under all Circumstances? BALLER.
5. The Syphilis Paresis Question. FELIX PLAUT and OSCAR FISCHER.

1. *Osteomalacia in Insanity.*—An account of four cases of osteomalacia found among the material of the Pforzheim Asylum. All of the subjects were women who had never borne children; one was of middle age and the others old people. The disease did not appear in any of them until they were well on in life. Although dating from a time when this clinical form was not recognized, the author thinks from their histories that all were cases of dementia præcox. He suggests a connection between the osteomalacia and the autotoxic influences supposed to be at work in dementia præcox, but acknowledges that the distance which separates the outbreak of the disease from the initial mental trouble renders any proof of such a connection out of the question.

2. *The Clinical Meaning of "Physical Persecutory Delusions."*—Kraepelin sees in the delusion that the body is being influenced from outside through unseen agencies, a ground disturbance of dementia præcox. Wernicke describes it as a form of delusional explanation of an alteration of the content of consciousness mainly as a result of fallacious perceptions. The content of this delusional explanation depends upon the individuality of the patient, especially upon his education and environment and upon the prevailing ideas of the time (e. g., Influence by witchcraft, telephone hypnosis). The author examined as to the presence of these physical persecutory delusions a material of 1,000 patients among them 440 cases of dementia præcox. In 130 of the latter, physical persecutory delusions were found. In the hebephrenia and catatonia cases such delusions occurred only in ill-developed form; in the paranoid dementions on the contrary they were a more constant and better developed feature. He gives a résumé of the histories of 18 cases and draws the following conclusions: The delusion of physical persecution was found to play a preponderating role in 4 per cent. of his cases of dementia præcox, to be present in about 30 per cent. In twelve of sixteen cases the connection of this symptom with dementia præcox is to be assumed from the course and termination; in four comparatively recent cases it was not so clear. The symptom was also observed by the author in one presenile case, and in another patient who had some of the symptoms of general paresis. The author's investigations lead him to the conclusion that delusion of physical persecution is an expression of the characteristic catatonic ("sejunctive") disturbance of the will in the psychosensory sphere, is closely connected

with dementia præcox and is pathognomic of this psychosis as distinguishing it from paranoia. He thinks, hence, that the cases showing this symptom even when they have long presented the picture of an apparently true paranoia, should be considered as belonging to the paranoid form of dementia præcox.

3. *The Psychopathology of Imperative Conditions.*—The question as to the exact position of imperative conditions in psychopathology is as yet unsettled. As a contribution to the discussion of the subject the author gives the histories of five cases which have come under his observation, with a consideration of their psychological relations, and draws certain conclusions. The cases present examples of imperative acts, imperative thoughts, inhibition and phobias. The views of various authors with regard to these conditions are discussed quite at length and the author sums up as follows: The absence of the emotive element is characteristic of the imperative phenomena (conceptions, acts, inhibition, affects). The patient's consciousness is unclouded; he has a realization of the morbid condition and a feeling of being under the influence of an irresistible impulse (constraint—"Zwang"). Imperative acts are distinguished from impulsive acts by the fact that the latter are initiated by powerful emotions which are entirely lacking in the case of the former. Imperative ideas differ from delusional, autochthonous and overmastering ("ueberwertige") ideas, in that in the first instance the patient has consciousness of morbidity, while in the second he is convinced of the reality of his conceptions; also in the first case these conceptions are not changed and correspond to actual conditions, while in the second they are falsified. The feeling of irresistible impulse which is present in these conditions differs from that observed in other pathological states (with delusions, hallucinations, etc.), since in imperative conditions this impulse is felt as a constraint, while in the latter such a feeling does not exist. The feeling of constraint which these patients experience is due to the fact that on the one hand consciousness is unclouded and the process of thought proceeding unaltered, while on the other there is a mechanical intrusion of obsessive thoughts, acts or effects, for which an emotive basis is lacking, and which hence appear to the self-consciousness of the individual foreign and constrained. The root of origin of imperative conditions is to be sought, not in disturbances of the intellect, or in those of the will, but in the emotional sphere, in spite of the fact that in their presence the emotional element appears to be forced into the background. Imperative conditions arise in the manner that an affect begets, in one case, a certain conception or train of conceptions, in another the impulse to perform certain acts or to produce certain expressive movements. All these manifestations are originally called forth by an affect and accompanied by an emotional condition, and later when this emotional element has been lost they persist and are repeated throughout life, which persistence is to be attributed to the indifferent, inert character of the patients in whom they appear. The phobias are to be separated from the imperative conditions as they have nothing in common with these. They are to be attributed to the cloudings of consciousness, common in psychopathic individuals, in whom strong affects are apt to produce an obnubilation of consciousness which favors the production of delusional conditions. Clinically imperative conditions must be recognized as a special type of characteristic origin, course and symptomatology. They may be divided into those characterized particularly by acts and by inhibitions, those in which the ideational sphere is

chiefly affected and those evidenced by affects. The author holds in the main to Westphal's definition of imperative conceptions, differing from him only in finding their origin in affective conditions rather than in a primary disturbance of thought.

4. *Are Isolating Rooms Superfluous.*—That control of violent and excited patients can only be exercised by resort to chemical means through mechanical appliances, or by the hands of attendants, is thoroughly understood. It hence becomes necessary to choose whichever can be shown to be the least of these evils. The author urges that the prolonged bath and the bed treatment in wards implies restraint no less than other measures, and points out that the difficulties to be overcome have already made themselves manifest in the invention of the "lattice-bed,"—an arrangement by which a wire cover can be fastened over the top of the bed so that the unruly patient is held like an animal in a cage, and by other appliances for keeping those who resist in the tubs. Even apart from such arrangements which seem like a return to measures of a century ago, many patients resist the prolonged bath and can only be kept in it by the hands of the attendants, of whom a goodly number must be provided to carry out the treatment systematically. He also finds that the mere presence of other patients increases the unrest of a certain number of the excited. Hence while a believer in the bed and bath treatment he maintains that it should be applied with judgment, as it is not suitable to every case; and sees no serious objection, but on the contrary frequently an advantage, in keeping patients who remain disturbed in the observation ward, in a single room; not locked in, but under the constant supervision of an attendant.

5. *The Syphilis Paresis Question.*—This joint report, presented at the meeting of the German Psychiatric Society at Bonn, is divided into two parts; the first by Dr. Plaut upon the relation between syphilis and paresis from the standpoint of etiology, in the light of the newer researches, especially by sero-diagnosis, with which his name is so closely connected; the second upon the anatomical basis of paresis and its relation to syphilitic processes, by Dr. Fischer. The first author considers this subject under the following headings: (1) Must syphilis have preceded the onset of paresis? (2) Is it still existent while the paresis is running its course? (3) At the time of infection are there already influences which make for a future development of paresis: (a) Through a special variety of virus ("syphilis à virus nerveux"), (b) through a special predisposition of the victim which manifests itself first in the mildness of the syphilitic manifestations, and second in a recognizable degenerative basis. (4) In how far can the different hypotheses with regard to the development of paresis upon a syphilitic basis be brought into agreement with the apparent opposition of certain clinical facts observed in connection with the disease?

He sums up his conclusions as follows: (1) Without precedent syphilis there is no paresis. (2) It is not improbable that while the paralytic process is going on active virus is still present in the body. The parietic is in other words a bearer of spirochaetæ. (3) There is not sufficient evidence of a "syphilis à virus nerveux." (4) The fact that almost always the syphilis in those later parietics runs an exceptionally mild course gives strength to the idea that in these subjects there is a predisposition to the disease in a congenital abnormality of the protective reaction to syphilis. (5) Attempts to establish a relationship between heredity, degeneration and predisposition and general paresis have so far not proved the connection, particularly it seems doubtful if there is any special brain predisposition.

(6) Exogenic influences—as alcoholism, trauma and overexertion of the nervous system—in all probability are not essential causes of general paresis, but rather play the role of contributing causes, in so far as they lower the physical and mental resistance. (7) The difference in the syphilitic products at different stages does not appear to depend upon a qualitative difference in the spirochaetæ, but rather upon an alteration in the reaction of the infected subject. Since this alteration leads to a tertiary stage in only a small per cent. of those syphilized, and since a further alteration seems necessary for the development of paresis, it is not remarkable that such a small number of syphilitics later become paretics. (8) A number of considerations render it probable that chronic syphilitic processes precede the outbreak of paresis, but whether they should be looked for in the central nervous system or not it is impossible to say at the present time. The long period which elapses between syphilization and the outbreak of paresis is perhaps to be explained on this theory. (9) The inefficiency of mercury in paresis is no argument against its syphilitic nature, for we have no definite information with regard to the pharmacological action of this drug. (10) For the decision of the question, as to whether the lesions of paresis are syphilitic in nature or not, we must submit to the judgment of the anatomists, at least for the present. (11) The results of serodiagnosis justify the suspicion of a very close relationship between paresis and syphilis, but since at present we are unable to give the exact biological relations of the reacting substances, we must wait a while yet for a definite clearing up of the subject.

In the second part of this report Dr. Fischer considers the anatomical side, under the following heads: (1) What changes are found in ordinary general paresis? (2) How are the changes found in the cortex to be looked at from a pathological-anatomical standpoint? (3) Are these changes so regular that only such cases as show them should be considered as examples of general paresis? On the other hand are such cases as run a clinical course which is different from that usual in general paresis, but which show these changes, to be considered as paresis? (4) Can we from the anatomical standpoint give a positive answer to the question as to whether these changes are syphilitic or not, and what are we to understand by “cerebral syphilis” (“lues cerebri”)?

After a full discussion the author sums up the present state of our knowledge in the following résumé. (1) Well characterized histological changes in the brain are found in general paresis, but the diagnosis is not to be made upon single findings, but upon the sum of known brain changes. (2) The histo-pathological process is a parenchymatous degeneration combined with chronic inflammation, in which one must be considered as dependent upon the other. (3) The histopathology must take the first rank in establishing the clinical conception of paresis. (4) From the clinical standpoint four varieties of paresis can be distinguished: (a) Ordinary paresis, (b) Lissauer's or focal paresis, (c) atypical paresis, (d) stationary paresis. (5) Paresis cannot from the anatomical standpoint be considered as being due to a direct syphilitic lesion.

This very complete report should be read in its entirety by all those interested in the present status of this most important question.

C. L. ALLEN (Los Angeles).



## Book Reviews

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LE HACHICH. *Essai sur la Psychologie des Paradis éphémères*. By Raymond Meunier. Bloud, Paris.

After comprehensively reviewing whatever has been written on the subject of Haschisch, the author concludes that, whatever its active principle may be, it produces an intoxication which manifests itself in a phase of excitement accompanied by lucid intervals, and a phase of depression. This acute intoxication if often repeated acts as a poison on the central nervous system and may lead to insanity and dementia. The author does not agree with those who claim that Haschisch intoxication increases the lucidity of the intelligence. The absorption of Haschisch produces an intense state of suggestibility and auto-suggestibility, and it is this exaggeration of suggestibility which differentiates this intoxication from other forms of insanity. Haschisch, more than any other intoxicant, is apt to lay open the subconscious mentality of its victim. That, as well as the fact that it develops suggestibility and auto-suggestibility, could be made use of in psychotherapy. The book is accompanied by a complete bibliography on the literature.

A. A. BRILL (New York).

HANDBOOK FOR ATTENDANTS ON THE INSANE. Fifth Edition, 1909. Pp. 390. Chicago, W. T. Keener & Co.

This work is published by the authority of the British Medico-Psychological Association and is intended for use in the training schools for nurses in the hospitals for the insane. It is the official handbook on which candidates are examined for their proficiency.

This edition has been considerably enlarged and in general may be said to continue the excellent features of the previous editions. It is a most admirable book in every way; however, one cannot refrain from wondering if it is not getting too large, and if perhaps too much is not being crowded into the nurses' curriculum. There certainly lies a danger in that direction.

WHITE.

FUNCTIONAL NERVOUS DISORDERS IN CHILDHOOD. Leonard G. Guthrie, M.A., M.D., F.R.C.P. London, Oxford University Press, 1907.

This book is a distinct advance in the type of book which treats of nervous diseases in children, etc., combines good psychology with practical medicine.

It develops the effects of emotion upon the health of the child, the results of hyper-sensitiveness of special senses, the fears of neurotic children, moral and mental failings, and so on.

It treats of physical failings and troubles of nervous children, such as chorea, tics, enuresis, delayed walking, all in a broad and at the same time an accurate manner.

LUDLUM.

DIE ERKRANKUNGEN DER PERIPHERISCHEN NERVENSYSTEM. Von Prof. M. Bernhardt, in Berlin. Zweite neu und vermehrte Auflage. Alfred Hölder, Wien. 25 Marks.

We had occasion, some time since, to call attention to this monograph in its first edition. The second edition, which appeared a few years ago, inadvertently skipped our attention, and a short review of its contents will be given, since there have been so many new things added to the final edition that it is in reality a new work, and a very valuable one.

We here have two volumes, with an additional chapter by v. Frankl Hochwart on Akroparesthesiæ. In Volume I, of 500 pages, three general sub-divisions are made: (1) General Pathology of the Peripheral Motor Nerves, Especially Paralysis; (2) General Pathology of the Peripheral Sensory Nerves, Exclusive of the Neuralgias, in the Narrow Sense; (3) Special Pathology of the Peripheral Palsies. Volume II takes up (1) the study of convulsive disorders in the motor nerves, first of the cranial nerves, and then of the spinal nerves, a special chapter being devoted to the occupation neuroses. In the second half of the second volume the neuralgias are described, the general pathology preceding the special pathology of the neuralgias. Finally special chapters are added on achillob-dynia, heel pains, metatarsalgia, headache, joint pains, and back pains.

Criticism of this work at this time is superfluous. Every one knows what a monument of patient, industrious research the first edition was—the present is only more so, and little further can be said. Nothing has escaped the author's eye, and the matter, colossal in its proportions, has been arranged and considerably classified—made perhaps a little more systematic in the present volume.

In its enlarged new form, Bernhardt's work will remain a classic for many years, and probably we shall be favored with a new edition, such have been its excellent practical merits, in which the newer researches on the trigeminus will be added, and the newer French work on the radicular affections.

JELLIFFE.

PSYCHOLOGY APPLIED TO MEDICINE. David W. Wells, M.D., Boston. F. A. Davis Co., Philadelphia, Pa., 1907.

This book is intended to show the relation between medicine and psychology. It does so by giving the essentials of hypnosis, optic psychology and psycho-therapeutics. It treats of the theories of habit, reason, sensation and instinct. It does not go sufficiently into the principles of psychology to make them of value in dealing with patients.

LUDLUM.

## Notes and News

Dr. Smith Ely Jelliffe has just returned to his practice in New York City after spending six months in the Psychiatric Klinik of Berlin, with Professor Th. Ziehen, and four months in the service of Professor Dejerine at La Salpêtrière, Paris.

# The Journal OF Nervous and Mental Disease

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## Original Articles

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### DISTRIBUTION OF ENCEPHALIC HEMORRHAGES<sup>1</sup>

BY S. D. W. LUDLUM, B.S., M.D.

INSTRUCTOR IN NEUROLOGY AND NEUROPATHOLOGY, AND LECTURER ON ABNORMAL PSYCHOLOGY, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA

With Dr. Beevor's drawings of the areas of the brain supplied by the different arteries and with injected specimens of my own, comparison has been made with the points of softening and areas involved by hemorrhage in the cases collected in the laboratory of Dr. Spiller.

Accurately mapped out areas of the distribution of the various cerebral vessels have not been presented prior to the publications of Dr. Beevor<sup>2</sup> and that work has made it possible to definitely establish the location of vascular lesions. These lesions have usually been described as originating in the striate group of vessels, but it would seem in the 93 cases examined in this laboratory that they occur about as frequently in the anterior choroid, the posterior communicating, and the posterior cerebral arteries. They all are important factors both in softenings, cyst formations and hemorrhages in the region of the basal ganglia.

The blood supply of the internal capsule is from the anterior cerebral, the striate vessels, the posterior communicating, and the anterior choroid vessels.

The caudate nucleus has a supply from the anterior cerebral

<sup>1</sup> From the Department of Neurology and the Laboratory of Neuropathology in the University of Pennsylvania. Read at the thirty-fifth annual meeting of the American Neurological Association, May 27, 28 and 29, 1909.

<sup>2</sup> Philosophical Transactions of the Royal Society of London, Series B, Vol. 200, 1908.

and the striate vessels, as can be seen in the diagrams of Dr. Beevor.

The thalamus does not receive a supply from the striate group, but does from the posterior cerebral and posterior communicating.

The lenticular nucleus segments receive small quantities from the anterior cerebral and anterior choroid, the greater part, however, being from the striate group of vessels. As is shown in the drawing (Part A) of the injection of the middle cerebral artery there is a sharply demarcated line between the circulation of the internal capsule and the lenticular nucleus. This line shows the internal boundary of the supply of the middle cerebral and agrees with the line drawn by Dr. Beevor.

This other injection shown in the diagram (Part B) is of the striate group of vessels of the middle cerebral artery, the remainder of the artery being tied off.

It shows that the internal border is the same as in the other injection but that it does not laterally go beyond the claustrum. These two injections alone are sufficient to demonstrate that there is no anastomosis in the terminal branches of the cerebral arteries, and that the area supplied by one artery is distinct from any other.

Areas of softening in our cases here collected usually occurred at these boundary lines, which is explained by occlusion of a terminal branch by sclerosis or other cause.

Softening has been found the most common condition; among 93 lesions studied, 69 were softened areas, and in many cases of hemorrhage it was possible to demonstrate the initial lesion as a softened area.

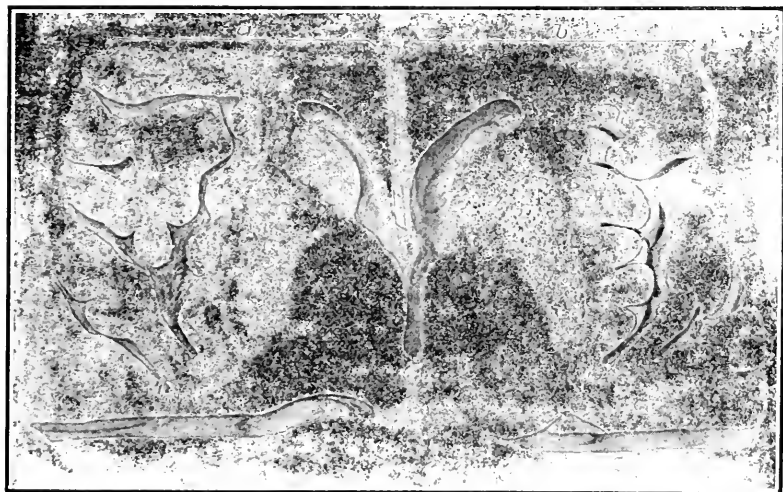
The posterior cerebral artery plays more of a part in these conditions than is commonly considered. I found 7 cases of hemorrhage and 6 cases of softening in the distribution of this vessel in the thalamus, and in most of the cases it was possible to demonstrate the point of rupture of hemorrhage. The basilar distribution in the pons was responsible for six lesions. There were eight in the posterior communicating arterial areas in the crus and thalamus. The anterior cerebral had two at the extremity of the caudate nucleus.

The anterior choroid artery had three lesions in the internal capsule in the region which is supplied by that artery, as shown by the charts of Dr. Beevor.

The remainder of the lesions involving the internal capsule

were from the striate group of vessels, having erosions in the lenticular nucleus extending over into the internal capsule, while the majority of lesions are in the area of the striate vessels, and situated in the lenticular nucleus and external capsule; yet many heretofore considered as being from the striate group are not so in reality.

The thalamus, according to Beevor and substantiated by all



Part A. Injection of entire middle cerebral artery. Shaded portion is the injected area.

Part B. Injection of striate vessels with Higgin's red drawing ink, shaded portion. No anastomosis with surrounding parts.

the injections which I have made, does not receive the terminal branches of a so-called lenticular optic artery.

All the branches going through the anterior perforated space ascend posteriorly to the anterior commissure; they quickly divide and supply the major part of the lenticular nucleus and the greater part of the caudate, they do not supply any tissue external to the external capsule, and the drawings show that these striate vessels do not anastomose at this line with the remainder of the middle cerebral vessels.

Two pathological specimens in our laboratory show this very distinctly, one is a thrombosis of the middle cerebral beyond the departure of the striate vessels, and with consequent atrophy and degeneration of tissue extending ventrally to the claustrum. The other specimen is the reverse picture, that is, a softening of

the entire striate region. The external border of this area corresponds exactly with the internal border of the thrombotic area.

The striate vessels vary in size from all very small ones in some brains to a fewer number and larger in others, and in their path upward no one seems any larger than any other, and I feel sceptical about giving the name lenticular striate or lenticular optic to any one artery, and calling it the artery of cerebral hemorrhage, notwithstanding the great authority of Charcot.

In all the cases of hemorrhage there was no artery sufficiently larger than another to be worthy of a name peculiar to itself, and the hemorrhage and softenings were in different areas in each case, and when hemorrhages were found in the thalamus they could not be designated as coming from a so-called lenticulo-optic artery, but were really from the posterior cerebral vessel.

And too, the anatomy of the striate vessels is not at all constant; in two distinct cases a large branch of the anterior cerebral passed backward and ascended in the anterior perforated space and acted as a striate vessel.

The physical reasons given by Duret and Brissaud as the causative factors in hemorrhage are: first, vascular hypertension; second, defect in consistence of parenchyma; third, defect in resistance of artery. For those vessels which are described as being the ones of predilection the explanation is, that they are small, fragile arteries arising directly from large and strong vessels, without the usual graduated transition in size; also that they do not anastomose among themselves, or with other vessels, and that with a pressure equal to that in the carotids these fragile terminal vessels readily rupture.

Pressure in extensible tubes produces not alone dilatation but elongation, this fact taken into consideration when there is sclerosis of the hexagon of Willis and of the small vessels, makes it quite clear that repetition of the elongation and dilatation with every systole would in those vessels unprotected by graduated transition in size make them prone to early rupture.

This type is, however, not confined to the striate vessels alone, but the conditions are true of the branches of the posterior communicating going to portions of the thalamus and other parts, and of the anterior choroid going to a part of the internal capsule, optic tract, peduncles and other structures. This latter vessel is somewhat relieved by the anastomosis of the main branch with the choroid plexus.

The line of the external capsule is the area of predilection, so termed by Charcot; it is the line where the striate circulation meets the other branches of the middle cerebral, and it is quite similar to all other areas where lesions occur, in that, a shutting off of the blood supply causes an infarct, and most all softenings found by me occurred on the boundary region of the different circulations. When a hemorrhage occurs it goes in a ventral direction because of that being the direction of least resistance.

The island of Reil forms a solid formation, and that with the skull as a base sends the blood in a medial direction. The island of Reil is embryologically very different from the striatum. In a two and one half months embryo given by Edinger, the striatum rises free from the base of the brain, distinctly separated by a fissure from the external wall of the lateral ventricle. Later it becomes so narrowed as to be invisible, but at the same time, shows a point of weakness here.

I found no lenticular striate vessels coming up in this region called the area of predilection. They arise more centrally in the lenticular nucleus and nourish the nucleus to this line.

In a number of cases a linear cyst had been formed in this, the external capsule, as a result of old hemorrhage.

Some scars in different parts of the brain, judging from the brown pigment contained, would indicate that a previous hemorrhage had coagulated extruded serum and been absorbed. Virchow designated these apoplectic cysts. This is plainly seen in one specimen. Hemorrhage formed the size of a marble around which is a distinct fibrous capsule. The hemorrhage is in the process of shrinking within the capsule. We do not know whether hemorrhages come from erosion of softened areas or not, but one case had a large hemorrhage connected with a scar in the external capsule, which scar or softening opened up the way for the occurrence of the hemorrhage. Small circular areas of softening about the circumference of a sclerotic vessel, as is so often found, may be the basis of some hemorrhage.

Charcot and Bouchard have amply demonstrated that miliary aneurysms are the real cause of many ruptures.

All the cases of hemorrhage in the ventricles, eight in number, which I have examined, show clearly an underlying softening in the basal nuclei with subsequent erosion through the lining of the ventricle and then a hemorrhage.

## AN UNUSUAL TYPE OF SYRINGOMYELIA<sup>1</sup>

BY WILLIAM M. LESZYNSKY, M.D.

OF NEW YORK

This man is a merchant 28 years of age and a native of Austria. He was first seen by me in February of this year, when the following history was obtained. Two years ago he began to have pain in the upper thoracic region extending downward to the right hypochondrium. The pain was sharp and lasted about an hour and a half. Similar attacks recurred from time to time, the pain increasing in intensity and duration. Six months ago the pain became more severe and burning in character, radiating from the upper thoracic vertebrae to the right nipple and the lateral portion of the abdomen. During the last four weeks the burning pain has been almost continuous, directly below the nipple line, at times extending to the upper third of the right thigh anteriorly. No pain in the back or elsewhere. No girdle sensation. No bladder nor rectal symptoms. No history of injury to the spine. No alcoholism. No syphilitic infection. Bowels act normally, his appetite is good and he sleeps well.

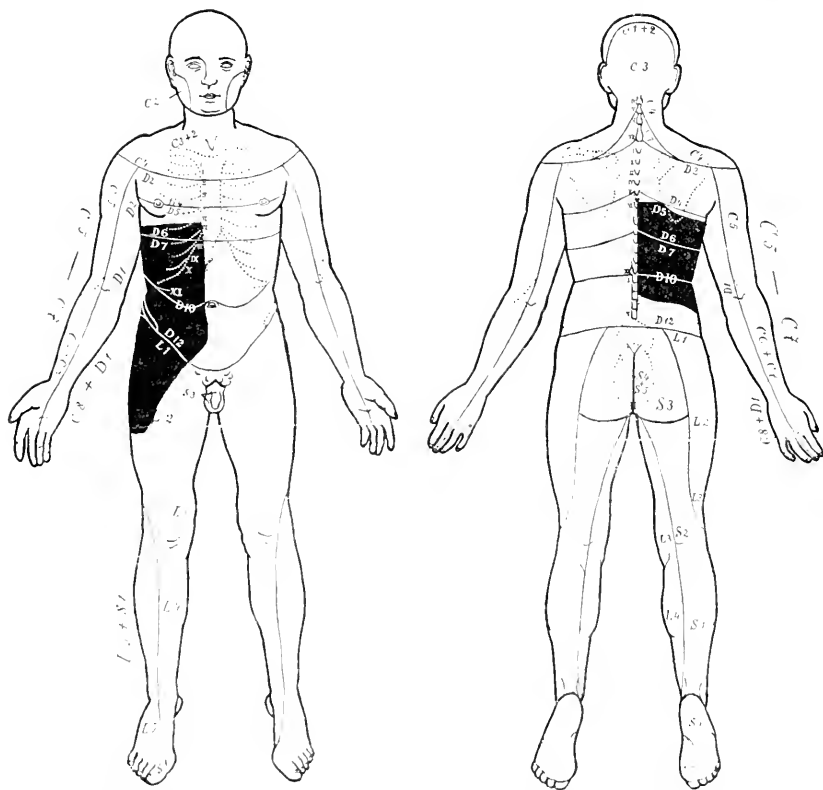
Twelve years ago he had an eruption over the right side of the back and right side of the abdomen extending to the knee. This was not associated with pain. There were numerous pustules which were lanced. During this attack, which lasted three weeks, he continued at his work as cashier. Three years ago he was kicked by a horse, which resulted in a compound fracture of the right tibia, and confined him to the hospital for about three months. His mother died in her fifty-fourth year from some abdominal disease. His father has some pulmonary affection. The brothers and sisters are in good health. For the last two years he has consulted many physicians, being treated for intercostal neuralgia and rheumatism. At last he was sent to me as a case of hypochondriasis or neurasthenia.

Examination shows a well-nourished man of medium height. The heart, lungs and abdominal viscera present no evidence of disease. Urine and blood analysis negative. The cerebro-spinal fluid obtained by lumbar puncture shows absence of lymphocytosis and the Wassermann reaction is negative. The vertebral column is normal, and there is no tenderness on pressure or percussion over the vertebrae nor in the course of the intercostal

<sup>1</sup> Read at the thirty-fifth annual meeting of the American Neurological Association, May 27-29, 1900.



nerves on either side. The pupils, eyegrounds, gait and station are normal. The muscular power and resistance in the upper and lower extremities are intact. The right knee-jerk is somewhat exaggerated, and slight ankle clonus can at times be elicited. The plantar and Achilles reflexes are normal. The *epigastric, abdominal and cremasteric reflexes are absent on the right side* but normal on the left. The inferior portion of the abdominal muscles on the right side seems somewhat flattened, and shows

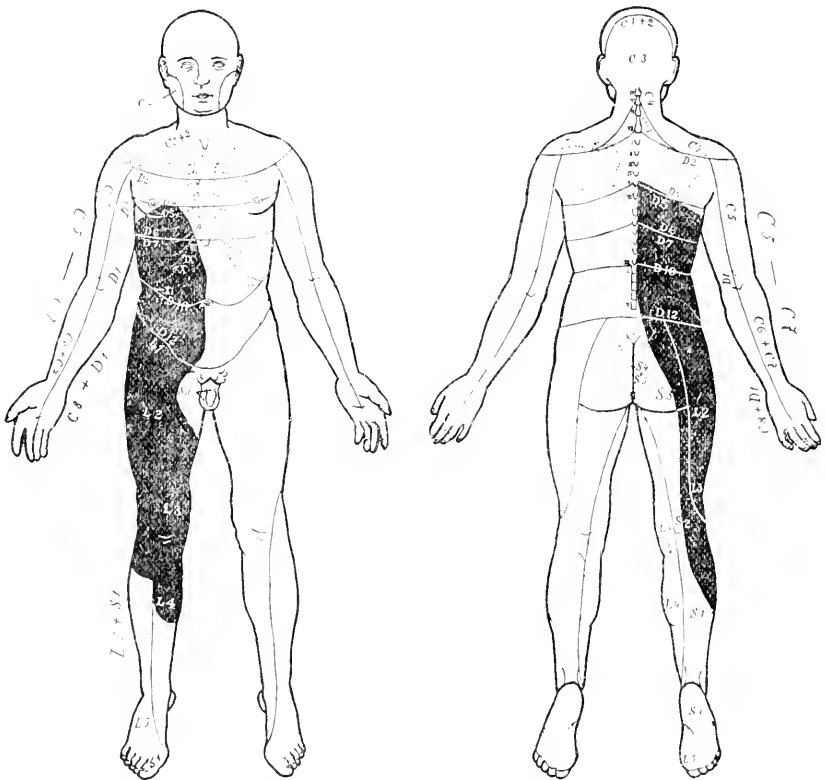


FIGS. 1 and 2. The shaded area shows analgesia and thermoanesthesia, with preserved tactile sensibility.

a quantitative decrease in faradic reaction. On the right side there is an area of analgesia and thermoanesthesia with preserved tactile sensibility extending anteriorly from a line four inches below the nipple to about four inches below the umbilicus; laterally, three inches below Poupart's ligament; and posteriorly from the seventh thoracic vertebra to the level of the third lumbar spine. (See diagram.) In this area, the sensibility to the

*faradic wire brush is absent.* There are no other sensory defects.

This patient was shown at a meeting of the New York Neurological Society three months ago. At that time the area of analgesia and thermoanesthesia extended from four inches below the right nipple to four inches below Poupart's ligament. Since then its outline has materially increased, so that now its upper border reaches the nipple line, and its lower border several



FIGS. 3 and 4. The shaded area shows analgesia and thermoanesthesia, with preserved tactile sensibility.

inches below the knee, thus involving the entire sensory distribution corresponding with all of the spinal segments from the fourth thoracic to the fourth lumbar inclusive. In this area shown in the diagrams the tactile sensibility is preserved, while the pain and temperature sensibility are completely abolished, including the application of the faradic wire brush. Below the area corresponding with the second lumbar segment he can distinguish

cold, but the sensibility to the application of heat is lost. The keloid observed over the analgetic side of the abdomen is the result of a burn from a hot-water bag applied by the patient several months ago for the relief of pain.

The pain on the right side has almost entirely subsided. About two months ago he began to complain of burning pain on the left side, at the level of the fifth and sixth thoracic vertebræ, and also in the left hypochondrium. This pain continues and is similar in character and location to that originally affecting the right side. There is no disturbance of motility and no indications of atrophy other than the slight flattening of the lower portion of the right side of the abdomen. Both knee-jerks are active, the right being exaggerated without ankle clonus. The plantar and Achilles reflexes are normal on both sides. The right epigastric, abdominal and cremasteric reflexes are still absent. His condition is otherwise the same as at the first examination.

The unilaterality of the symptoms, their almost exclusive sensory character, their accurate correspondence with our accepted views of the segmental sensory distribution, the characteristic dissociation of sensibility, and the entire absence of motor symptoms, leads me to present this patient as an atypical case of syringomyelia in its early stage, or a gliosis limited to the sensory tracts in the central portion of the cord.

For obvious reasons a tumor of the cord may be excluded.

I have been unable to find in the literature the report of an analogous case.

## A CASE OF GUNSHOT WOUND OF THE BRAIN WITHOUT FOCAL SYMPTOMS<sup>1</sup>

BY WILLIAM M. LESZYNSKY, M.D.

OF NEW YORK

On December 31, 1908, this boy, twelve years of age, was admitted to the Surgical Service of Dr. Parker Syme at the Lebanon Hospital, to whom I am indebted for the privilege of presenting him here.

While at play, another boy shot him in the head with a revolver carrying a 22-caliber bullet. He was brought into the hospital in a semi-comatose condition. The bullet had entered the frontal bone a little to the left of the median line, leaving an opening of about four millimeters in diameter, from which blood and lacerated brain tissue exuded. There was apparently no other injury to the skull. No subconjunctival hemorrhage, and no convulsions. The pupils and the position of the eyeballs were normal. The wound was cleansed and an aseptic dressing applied without probing for the bullet.

The following day the pulse was irregular and he was in a lethargic condition. On the morning of the second day he returned to consciousness, but gradually became restless and drowsy. Subsequently, the restlessness increased and he complained of pains in the head and neck.

On the fourth day he was in a condition of hebetude, with flushed face, and complained of severe pain in both gluteal regions. The pulse was 56 and irregular, temperature 101°, respirations 28. There was slight rigidity of the post cervical muscles. The pupils, ocular motility, position of the eyeballs, and eyegrounds were normal. No evidence of paresis of the face or extremities. No astereognosis. No objective sensory disturbance. The knee-jerks were equal but slightly exaggerated. No clonus. Kernig's sign was pronounced. Plantar reflex normal. The cerebro-spinal fluid withdrawn by lumbar puncture showed nothing abnormal. There was a leucocytosis of 20,600. The bullet had remained within the skull, and was located by X-rays in the occipital region.

With the above mentioned indications of beginning meningitis, the patient was etherized, and Dr. M. S. Kakels enlarged the original wound of entrance to a diameter of about two inches

<sup>1</sup> Read at the thirty-fifth annual meeting of the American Neurological Association, May 27-29, 1909.

and removed several small spiculæ of bone from the left frontal lobe. The wound was then packed with iodoform gauze and free drainage established. Within a few days the temperature had returned to normal and the meningeal symptoms disappeared.

The radiographs, made by Dr. E. W. Caldwell, clearly indicate the position of the bullet in the median line of the occipital region.

At present, five months after the injury, the pupils, central vision, visual fields, and eyegrounds are absolutely normal. In fact, the boy is in perfect physical and mental condition, and attending school daily.

The interesting feature in this case is that the bullet took its course almost directly through the median line, traversing the anteroposterior diameter of the brain, and therefore doing no damage to any area productive of focal symptoms.

The present location of the bullet, and the absence of signs of irritation, contraindicate surgical measures for its removal.

# THE DIET IN EPILEPSY

## SECOND CONTRIBUTION

BY A. J. ROSANOFF, M.D.

KINGS PARK, N. Y.

In the past few years investigations of the subject of proteid metabolism in the human body have led to a change in the generally accepted views concerning the daily amounts of proteid food constituting the minimum of physiological requirement.

Among the most significant studies are those of Chittenden,<sup>1</sup> who published in 1904 the details of a series of dietetic experiments which had been conducted upon three groups of men: five men engaged chiefly in mental labor; thirteen volunteers from the Hospital Corps of the U. S. Army—men doing a moderate amount of physical work in the form of daily exercises in the gymnasium; and seven college students actively engaged in athletics. The experiments consisted in maintaining in each case, for a period varying from several months to nearly a year, a diet containing much smaller quantities of proteids than those of usual diets, and in keeping records of the rate of urinary excretion, of the weights of the subjects, and of their general physical and mental health.

These experiments showed that the above groups of men could maintain health and functional efficiency for many months on diets containing less than half the amount of proteids that was formerly considered the minimum of physiological requirement. Repeated estimations of the total intake and output of nitrogen showed that there was practically no disturbance of the nitrogenous equilibrium.

Thus it was established that people ordinarily consume much more proteid material than is actually required by the organism, and Chittenden in formulating his general conclusions ventures the opinion that "it is more than probable that this excess of food is in the long run detrimental to health."

<sup>1</sup>Russell H. Chittenden. "Physiological Economy in Nutrition." New York.

Folin, working from another direction, arrived at similar conclusions. He made a study of the quantities and proportions of the several nitrogenous substances in the urine under conditions of a diet containing a liberal allowance of proteids—119 grams per day—but no meat; and under conditions of proteid starvation.

He found that under these widely differing conditions the excretion of kreatinin remained nearly constant, while that of urea varied enormously, being high when proteids were ingested in large amounts and falling to one-sixth or even one-eighth the amount in proteid starvation.<sup>2</sup>

These findings led Folin to formulate a new theory according to which proteid metabolism occurs in two phases: (1) exogenous metabolism and (2) endogenous metabolism. He believes, as Chittenden does, that people generally consume much more proteid food than is necessary, and from the point of view of his theory the object of exogenous metabolism seems to be largely to dispose of the excess of proteids ingested, the process consisting in a series of hydrolytic splittings resulting in the formation of urea, which is excreted. Endogenous metabolism, on the other hand, leading to the formation of kreatinin, uric acid, nitrogenous extractives, and perhaps to some slight extent also of ammonia and urea, he is inclined to regard as the essential basis of functional activity.

Whatever may be the bearing of these researches upon the hygiene of nutrition in general, it is clear that in any condition in which there is disturbance of nitrogenous metabolism, there is a possibility of serious harm resulting from excess of proteids in the diet.

The hypothesis according to which idiopathic epilepsy is a disease of nitrogenous metabolism need not be dwelt upon here further than to point out, in the first place, that the blood in status epilepticus has been found to contain abnormal quantities of ammonium carbamate,<sup>3</sup> in the second place, that the excretion of ammonia in the urine in epilepsy has been found to show ab-

<sup>2</sup>The excretion of the other nitrogenous constituents of the urine showed variations, but not so great as those of urea. For details of this work see: Otto Folin, "Laws Governing the Chemical Composition of Urine," *Amer. Jour. of Physiol.*, Vol. XIII, No. 1. Also "A Theory of Protein Metabolism," same Journal, Vol. XIII, No. 2.

<sup>3</sup>Krainsky, "Zur Pathologie der Epilepsie. Ueber Störungen im Stoffwechsel bei Epileptikern," *Neurol. Centralblatt*, Vol. XVI, p. 697.

normal fluctuations in connection with the seizures,<sup>4</sup> and in the third place, that epileptics have been found to show a special intolerance to diets containing large excess of proteids, such diets producing an increase in the number and severity of the seizures.<sup>5</sup>

The effect upon epilepsy of a diet containing proteids in quantities corresponding approximately to the actual physiological requirement, as established by Chittenden, had never been determined. I was, therefore, led to undertake a second series of dietetic experiments with a view to determining whether any benefit can be derived from such a diet in cases of epilepsy.

For this purpose fifteen cases of epilepsy of old standing, showing no evidences of any organic nervous lesion, were selected from amongst the patients on the female epileptic service at the Kings Park State Hospital.<sup>6</sup> In each case the seizures were recorded during the entire period of observation. The patients were weighed once a month. They received no medication beyond an occasional cathartic given when indication for it arose.

As in my first contribution pertaining to this subject, I shall give here only the total weekly average number of seizures for the period of each experiment in order to avoid in the comparison the error which may arise from spontaneous variations in the frequency of seizures in individual cases.

The results obtained were as follows:

#### EXPERIMENT I.—*Regular Hospital Diet*

*Breakfast.*—Oatmeal, wheat flakes, or farina with syrup or milk; bread and butter; coffee with milk and sugar.

*Dinner.*—Beef, mutton, veal, or pork; potatoes, vegetables, bread.

*Supper.*—Pudding, cake, baked beans, or macaroni; fruit; bread and butter; tea with milk or sugar.

This diet is somewhat variable, and the quantity of food re-

<sup>4</sup> Rosanoff. "Disturbance of Nitrogenous Metabolism in Epilepsy," *Journ. of Amer. Med. Ass'n.*, April 11, 1908.

<sup>5</sup> Merson. "On the Diet in Epilepsy," *The West Riding Lunatic Asylum Medical Report*, 1875.—Rosanoff. "The Diet in Epilepsy," *JOURN. OF NERV. AND MENT. DIS.*, December, 1905.

<sup>6</sup> I wish to acknowledge my indebtedness to Dr. H. F. Coffin, on whose service these experiments were carried out and who assisted me in arranging the details of the experiments.



ceived by each patient is not accurately measured. It is, however, a diet based on the old physiological standards, and is calculated to furnish considerably over one hundred grams of proteids per day.

This diet was maintained for ninety-one days, namely, from September 1, 1908, to November 30, 1908, inclusive. The total weekly average of seizures during this period was 62.5. The weights of the patients were fairly constant and their general health was good.

#### EXPERIMENT II.—*Low Protein Diet*

This diet consisted of three meals a day at the usual hours, each meal consisting of 125 gm. of bread, 16 gm. of butter and 250 c.c. of milk, carefully weighed and measured. By calculation this diet contains approximately 52.2 gms. of proteids, 70.3 gms. of fats and 220.0 gms. of carbohydrates per day.

It was maintained for seventy days, namely, from December 1, 1908, to February 8, 1909, inclusive. During the first week of this period the number of seizures was 63—practically the same as the average during the preceding period. As is well known, after a sudden change of diet is made it takes several days for the organism to accomplish its gradual adjustment to the new conditions. After the first week the number of seizures became less and the total weekly average for the remaining sixty-three days was 53.9.

During this period all the patients lost in weight, the losses varying from one and a half to ten pounds. In their life at the hospital these patients acquired a condition of moderate obesity; their losses in weight must have been largely, if not entirely, at the expense of their stored-up fat, as they did not seem to suffer in any way in their general health or to lose in strength.

Some of the patients were dissatisfied with this diet, but their complaint was not that it was insufficient but that it lacked in variety.

The net result that was obtained was, then, a reduction in the number of seizures by about fourteen per cent., apparently attributable to a simple diminution of the daily allowance of the proteids and to nothing else.

CAUSE OF CONTRACTURES AND SPASTICITY IN  
CASES SHOWING NO DEMONSTRABLE LESION  
OF THE PYRAMIDAL TRACTS WITH A  
PATHOLOGICAL REPORT OF  
THREE CASES<sup>1</sup>

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The three cases to be reported in this paper are examples of at least unusual causes of contractures and spasticity evidently of central origin clinically, in which, however, at autopsy there was no demonstrable evidence of any disease in the pyramidal tracts in two cases, and slight, if any, in the third.

In the first case, clinically, the patient presented the symptoms of a bilateral hemiplegia, with marked contractures of arms and legs. In the second case, one of apraxia (26), previously reported, there was general rigidity of the limbs, and spastic contractures of the left arm and, to a less extent, the left leg, were present.

In the third (27) case, also already reported, that was spastic paresis of the legs, dating from childhood, in a man who died at the age of 72. The discussion of the cause of the contractures in the first two cases will occupy our attention first.

Contractures may result, as v. Monakow (15) described, from (1) irritation of the sensory portion of the reflex arc, such as inflammatory processes in and around the joints, nutritive disturbances of the muscles, injury or inflammation of the peripheral nerves; (2) toxic and mechanical irritation around the motor nuclei, which does not injure them materially; (3) irritation or interruption of the cerebral connections, such as inflammatory foci, meningitic processes, circulatory disturbances and the like.

<sup>1</sup>Read by title at the thirty-fifth annual meeting of the American Neurological Association, May 27-29, 1909.

as well as similar causes operating upon the cerebellar connections and tegmental tracts (*Haubenbahnen*).

There are also contractures that are associated with hydrocephalus, the cause of which is still open to discussion; and contractures in psychopathic and functional nervous conditions, and in diseases of the spinal cord. It is the contractures that are caused by lesions of the cerebro-spinal system which will be discussed here.

While the causes of contractures in cases in which the pyramidal tracts have been found intact have been the subject of some discussion in the literature, there are very few cases of this sort on record. This phase of the question was discussed in the original paper, which contained the report of my third case.

The references in the literature to the cause, or causes, of contractures concern mainly those occurring in connection with hemiplegia, and in which there is a lesion somewhere in the motor tracts.

It would lead me too far afield to enter into an exhaustive discussion of the various theories advanced to explain the origin of hemiplegic contractures and spasticity; at the same time it is impossible to avoid a review of these theories in order to determine what relation they bear to the etiology of the contractures in the cases to be cited in this paper, in which the pathology differs so much from that commonly found in cases of hemiplegic contractures.

The early theories that hemiplegic contractures were due to exaggerated associated movements (*Hitzig* (10, 11)), or to secondary degeneration of the pyramidal tracts (*Bouchard* (1)), or the products of the destruction of the degenerated fibers, causing irritation of the anterior horns, thus giving rise to contractures (*Charcot* (2)), are no longer tenable.

The influence of the optic thalamus and subcortical centers upon the development of these contractures has been invoked by several authorities, namely, *von Monakow* (16), *Rothmann* (24), *Förster* (4) and *Grasset* (5).

*Von Monakow* looks upon the late hemiplegic contractures as the result of a disturbance of the kinetic equilibrium, and of the nature of an incomplete motor compensatory action arising from an extensive destruction of the highly developed central movement-components, particularly the primary fibers. Accord-

ing to his views the compensatory action is supplied in part by the gray substance of the spinal cord, and in part by the phylogenetic subcortical centers. Lesions causing hemiplegic contractures usually do not materially destroy the sensory tracts, and the preservation of these, and the destruction of the motor tracts establish a disturbance of the equilibrium in the delivery of the motor impulses. Centripetal stimuli flow in excess to the motor centers, and there is a false distribution of the sensory stimuli. The subcortical centers become chronically irritated, and this gives rise to the delivery of simple kinetic impulses, causing contractures which correspond in degree to the size of the cross diameter of the muscle.

Rothmann believed that the hemiplegic contracture, as well as the return of voluntary movement in the paralyzed muscles, are the result of an independent motor function of the optic thalamus and corpora quadrigemina, which gradually develops, rather than a return of the function of the pyramidal tracts, or a compensatory function of the cortex of the other side. Lewandowski denied that this was proved.

Förster claimed that the cause of the contractures is a subcortical fixation reflex situated in the subcortical centers and which operates in its full strength when these centers are severed from the inhibiting influence of the cortex. According to Förster these centers do not act at once after this influence is cut off, but it is only after a certain time that this function of the subcortical centers manifests itself. This is not the only cause, but is associated with an increase in the tendon and periosteal reflexes and skin reflex, as well as the production of associated movements. According to him the character of the contracture depends upon the factor by which the insertion points of the muscle are approximated, and that there develops a progressive involuntary contraction, in which condition of shortening of the muscle there is an inclination of the muscle to become fixed. In other words, the character of the contracture depends upon the tendency of the muscles to accommodate themselves to an approximation of their insertion points, and to be fixed in this position. He believes that the contracture is a subcortical fixation reflex.

Mann (17) criticizes Förster's position in this discussion, and states that he was unable to cause a change in the contracture by

passive change in the position, and also states that he has observed a flexor contracture from passive position change to an extensor contracture when there was a return of active movement in the latter muscles. Mann also objects to the position taken by Rothmann, on the ground that the restitution of motion is a return of voluntary movement, not an automatic one, and believes that the hemiplegic contracture and the restored movement originate in the medium of the same tracts; also that paralysis and contractures may result from injuries beneath the subcortical centers.

In a recent paper Mann no longer adheres to his early views that there are excitomotor and inhibitory fibers for each muscle, *i. e.*, that excitomotor fibers for certain groups of muscles are identical with, or run along with the inhibitory fibers for their antagonists. His present view is that in purposeful movements there flow out, besides innervation impulses to certain muscle groups, denervation impulses for their antagonists.

As recently expressed his theory for the development of these contractures is that they, as well as typical residuary hemiplegic palsy, result from a *partial* interference with the conduction along the central motor fibers. These impulses lose their harmony to a certain degree, by which some muscles suffer in their capacity to contract, and others to relax, developing a disharmony which expresses itself in a lack of tone on the one hand and an excess on the other. They are due, in other words, to an innervation of the agonists and a denervation of the antagonists. Mann sees a constant relation between the restitution of power and the development of contractures and claims that the latter are the result of *partial* destruction of the pyramidal tracts.

Lazarus (12) believes that the interference in the conduction of the pyramidal tracts is associated with a cutting off of the inhibitory influence from the cortex, resulting in a hypertonia of both agonistic and antagonistic muscles. According to him the normal muscle tone represents a reflex act dependent upon the integrity of the spinal and spino-cerebral reflex arcs at the same time. When the spino-cerebral arc is destroyed, and the spino-reflex arc is intact there results a loss (*Ausfall*) of the inhibitory impulses from the cerebrum, which is expressed clinically as hypertonia and increased reflexes. Paresis, he states, always is associated with hypertonia, and they are both the result of dis-

turbance of conduction in the pyramidal tracts, and he criticizes Mann's idea of a partial loss of conduction in the pyramidal tracts as a cause of the hemiplegic contractures. The dissociated palsy is not, according to Lazarus, the result of a removal of the relaxing impulses for the agonistics, but is a dissociated muscle arrangement. The palsy in the muscles, Lazarus holds, is relative to the normal superiority of the muscles, contracture developing in that muscle which is relatively superior in strength and tone; and, according to him, the more complete the palsy the more extensive the contracture. The characteristic hemiplegic contracture corresponds to the physiological superiority of certain agonistic functions over their antagonistics.

Mann (18), however, in response to Lazarus's criticism, states that total destruction of the cord does not cause the greatest degree of contracture, and that there are cases in which total destruction of the pyramidal tracts has not been associated with contractures at all, and he believes that the contractures are more conspicuous in those cases in which certain muscle groups are palsied, while their antagonistics are preserved, and therefore, when the motor conduction is partially intact.

But Lazarus (13) raises the objection that the typical extension of the paralysis of internal capsule origin to the entire half of the body is an expression of total destruction of the pyramidal tracts, and that it is not compatible that in this form of paralysis the flexors of the arm remain intact, and the extensor fibers are destroyed. He further calls attention to the fact that an analysis of the paralysis in typical hemiplegia shows in all the muscles a loss of power; never are the antagonistics entirely exempt. They are not only hypertonic, but parietic, as is seen in efforts to overcome the contractures, and he does not believe with Mann that the reflexes are increased only in the agonistics.

An effort has been made by some authorities to connect hemiplegic contractures with disturbances of inhibition, which is exercised by the cortex through the pyramidal tracts upon the spinal cord.

According to Marie (20, 21) the cells in the anterior horns of the spinal cord are normally in a permanent state of activity—"une machine toujours sous pression,"—and the central neurone has an inhibitory action upon this activity. When communication between the cortex and the cord is interrupted the inhibitory influence is removed, contractures resulting in consequence.

Parhon and Goldstein (23), who accept Marie's theory, believe that the excitomotor fibers for one muscle group functionate at the same time as the inhibitory fibers of the antagonistic muscles. In hemiplegic contractures the excitomotor fibers for the contracted muscles are conserved, and the inhibitory fibers are implicated; while the contrary exists for the antagonistic muscles. These authors oppose the theory advanced by Grasset (5), who places an automatic center for muscle tone in the pons. Grasset believes that lesions of the spinal portions of the pyramidal tracts cause contracture by suppressing the inhibitory action of the tone which arises in part from the pons, and in part from the spinal cells.

According to Lazarus the removal of the inhibitory influence of the cortex is the cause of the hypertonia of the muscles.

Rothmann (25), however, does not believe that the disturbances of active inhibition and its conducting fibers is to be considered in the explanation of contractures, while Lewandowski (14) believes that contractures are not caused by the removal of inhibition, but are due to persistent inhibition of the antagonistic muscles. The effect of position in causing contractures is not simply reflex, Lewandowski claims, but is also in part the result of certain volitional innervations.

He further states that if there is a complete break in the motor conduction there would be complete paralysis, and if the contractures were due to inhibition thus removed, all the muscles would be contracted; but this is contrary to the facts, for in complete palsy, he states, there are no contractures.

Van Gehuchten (7) holds that there are two sets of fibers connecting the cortex with the cord, (1) the direct cortico-spinal tracts in the pyramidal tracts, and (2) the indirect cortico-ponto-cerebellar spinal tracts. The latter are composed of two parts: (a) a cortico-ponto-cerebellar portion, and (b) the cerebro-spinal portion which connects the cerebellum with the cord through the inferior cerebellar peduncles. The direct fibers have an inhibitory action, and the indirect fibers are excitomotor. Lesions which injure the direct, or inhibitory tracts permit the predominance of the action of the excitomotor fibers, with the result of inducing contractures. These two tracts are associated with each other in the pyramidal tracts in their cerebral course, where lesions cut off all influence of the cortex from the cord, and cause a flaccid paralysis. In the spinal cord, however, these

tracts are independent of the pyramidal tract, and lesions of the direct connections (cerebro-spinal tracts) or inhibitory fibers allow the predominance of the indirect excitomotor fibers, resulting in the causation of contractures. The protagonists receive a greater amount of innervation than the antagonists, in a word, and thus give rise to the contractures.

Gerest (6) raises an objection to this theory that in lesions of the cortical centers, destroying the cortical neurones, contractures may be absent, and that the late appearance of contractures is against van Gehuchten's view. He also raises the objection to van Gehuchten's theory that contractures occur in muscles in which the paralysis is less intense, but this is not true in peripheral neuritis. But van Gehuchten believes that there are always some persistent motor cells, in answer to Gerest's first objection, and that the late appearance of the contractures is due to the removal of the compression of healthy fibers, which causes the early flaccid paralysis; and, finally (in reply to the third objection), that in peripheral neuritis complete paralysis of muscular groups is not always observed, as in post-hemiplegic contractures.

Mann states, in objection to van Gehuchten's theory, that the contractures are an expression of a predominating innervation of the functionally preserved muscles over the palsied muscles; that in peripheral paralysis one would expect greater contractures than in hemiplegia; but the reverse is true. And also certain cases of high-grade contracture are found where the palsy is slight, and the reverse in hemiplegia. Moreover, peripheral contractures are different from hemiplegic contractures, being constant in the former and variable in the latter. And he goes further and states that in the development of the contractures there is sometimes a certain degree of hypertonia, where the voluntary motion has not returned, or only slightly so.

Van Gehuchten (9) criticizes the position held by Mya and Levi, who believe that the muscles remain inert after being cut off from their excitomotor centers, and that they then recuperate insensibly an independent function resulting in hypertonia, that is, contractures and increased reflexes. Van Gehuchten, however, states that when the palsy is not a flaccid one there is not entire interruption of the fibers, as Mya and Levi believe, and that moreover, after complete section of the cord, the complete flaccid palsy which results is not followed by contractures.



Another element in the causation of contractures is, according to von Monakow, the larger volume of the muscles, that is the static preponderance on one muscle group over another. In this connection Lazarus also calls attention to the element of superiority of certain agonistic muscles over their antagonistics.

According to Rothmann, van Gehuchten, Mann and Crocq (3), the contractures are associated with incomplete interruption of the motor conduction fibers. But von Monakow has seen hemiplegic contractures when there was complete resorption of both, or one pyramidal tract, and Lazarus believes that contractures depend upon total destruction of the pyramidal tracts.

Van Gehuchten believes that the contractures are associated with the return of power without which no contractures develop. Mann agrees with this view, and states that the hypertonia is located in the antagonistic muscles which preserve a certain degree of motion.

In all these theories the contractures are related to the interruption of the action of the motor cortex, either partial, as assumed by van Gehuchten (8), Mann (19) and others, or complete, as claimed by Lazarus.

In other words, it is assumed that all the causes of hemiplegic contractures are related in some way to implication of the motor tracts, or, in certain cases of infantile cerebral paralysis, to an agenesis of the pyramidal tracts.

In the first case to be reported here no lesion of the pyramidal tracts of the cord, medulla, or pons, or in the motor portion of the internal capsule could be found.

This case was that of a man aged 67, who was examined only a short time before death, and who at that time appeared to have double hemiplegia with contractures of the arms and legs. The forearms were partially flexed on the arms and the hands were held in a position of flexor contracture. The thighs were flexed on the trunk and both knees were held well over toward the left of the trunk. The legs were flexed on the thighs, the feet extended. There were also contractures of the neck muscles, the head being flexed markedly upon the trunk. Efforts to overcome these contractures were met with considerable resistance, especially in the shoulder-joints.

Sensation was apparently preserved to the sharp points of the esthesiometer.

The knee jerks could not be elicited, probably due to the

contractures. The Babinski phenomenon was present on both sides. Only slight voluntary motion was present in the arms and legs. There was general wasting, but no local atrophy.

The family and previous history was unimportant. The first symptoms dated 31 months before death—suddenly. Contractures began to develop in about 6 months. There was no apparent disorder of vision or speech. This much of the history of the onset of the disease was obtained from his son, who was unable to give any further data. The mental condition precluded obtaining any information whatever from the patient.

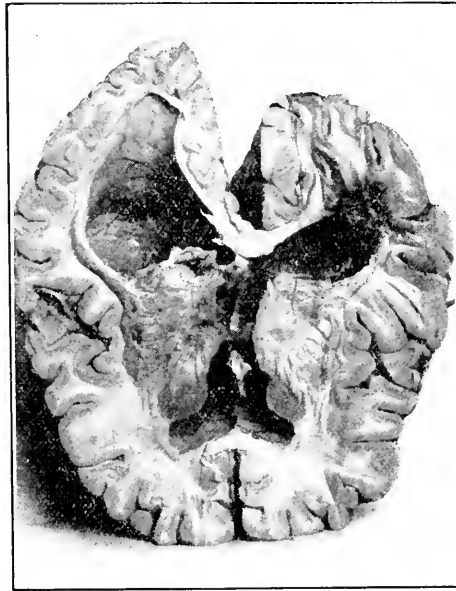


FIG. 1. Case 1. Hemorrhage into the wall of the posterior horn of the lateral ventricle.

Pathologically there was a hemorrhage in the outer and posterior wall of the posterior horn of the right ventricle which destroyed the fasciculus longitudinalis inferioris, the optic radiations of Gratiolet, and the tapetum in part. There was also a small area of hemorrhagic softening situated about 3 cm. below the superior border of the right hemisphere at about its middle portion, cutting the fibers of the corona radiata, and extending in a vertical direction for about half a centimeter. There was also a small hemorrhage in the left optic thalamus.

Serial sections were made of the brain and also of the pons, medulla, and various parts of the spinal cord.

Secondary degeneration was found in the occipital lobe, in the fasciculus longitudinalis inferioris, optic radiations of Gratiolet, and the tapetum. The white matter of the cortex going to the calcarine region stained well. Secondary degeneration of the white matter could also be traced from the small hemorrhage in the right corona radiata, in a downward direction, to the posterior segment of the internal capsule. This was very slight, not extensive, and could not be traced as far as the foot of the peduncle. Degeneration of the occipito-frontalis fibers was also noted. Nowhere, however, in the entire motor tract could any degeneration be demonstrated.

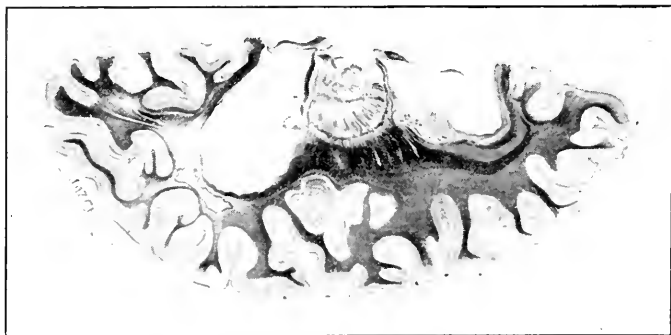


FIG. 2. Case 1. Degeneration of the occipito-frontalis bundle and internal capsule.

The second case, already reported before this society last year, was one of apraxia occurring in a blind man of 55, who "was totally unable to designate the position of the limbs; could not locate touch anywhere; could not recognize objects by the sense of touch; and his touch and temperature senses were imperfect in the left hand. The left hand, though capable of some reflex acts, could not be moved voluntarily. The left hand was apraxic, and apraxic phenomena were present in chewing and walking."

"The left hand was held in a slightly contracted position, that is, partial flexion of the forearm upon the arm, and semi-flexion of the fingers. This could be passively overcome almost entirely, but there developed at the same time a tremor of both

arms, especially the left. There was also a slight but distinct rigidity of both legs and the right arm, but to a less extent than in the left arm.

"The autopsy revealed the presence of degeneration of the white matter of the right occipital and parietal regions on the convexity, and the posterior portion of the temporal lobe, the calcarine region remaining intact. The fasciculus longitudinalis inferioris and the optic radiations were degenerated on the right, and probably, though less markedly, on the left. On the left side there was degeneration in the occipital and temporal regions to a much less degree, leaving the median surface intact. The corpus callosum in its posterior portion was degenerated. Elsewhere the brain was apparently normal." Nowhere was there any degeneration of the motor tracts in the brain or cord.

The third case was reported before a recent meeting of the Philadelphia Neurological Society, and was that of a man who, at the age of 71, presented symptoms of spastic paraplegia dating from early childhood, and who, at autopsy, presented no gross lesions excepting an extensive effusion of blood in the pia arachnoid, extending over both hemispheres and the base, and evidently of recent origin. The pia of the cortex showed slight cellular infiltration, the blood vessels were somewhat thickened, and the cellular elements in their walls were somewhat increased. The cells of the cortex revealed no abnormalities, although no Betz cells were found.

Sections from the pons, medulla and spinal cord, by the Weigert method, showed no signs of degeneration whatever. Stained by hematoxylin and acid fuchsin the crossed pyramidal tracts on both sides took the stain slightly more intensely than the remaining white matter.

A further study of these fibers in the crossed pyramidal tracts showed that a number of them were very small and closely packed together, and that large, well-formed fibers were rare. There was no evidence of secondary degeneration of the pyramidal tracts. There was slight increase in the connective tissue in this region, but nowhere did it present the appearance seen in spinal cords in which the pyramidal tracts were the seat of secondary degeneration. The fineness of the fibers was very evident in comparison with the larger fibers in the cerebellar tracts.

In the first case, then, presenting shortly before death the appearance of a double hemiplegia with contractures of the arms, legs and neck muscles, there was pathologically, a hemorrhage in the right side of the brain involving the outer and posterior wall of the right lateral ventricle, which cut the optic radiations of Gratiolet, the inferior longitudinal bundle, and the tapetum in part, leaving intact, however, the gray matter.

There was also a small area of softening situated about 3 cm. below the superior border of the right hemisphere, at about its middle portion, cutting the fibers of the corona radiata, and extending in a vertical direction for about half a centimeter. This caused some degeneration of fibers in a downward direction, which could be traced into the posterior limb of the internal capsule for a short distance.

There was also a hemorrhage in the left optic thalamus.

As a result of the first lesion there was a degeneration of the white matter of the occipital lobe, and a degeneration of the occipito-frontal fibers.

In the presence of such pathological findings it is difficult to explain the clinical symptoms presented by this case. With practically intact motor neurones in the spinal cord, medulla and pons and cerebrum, with lesions only in the sensory areas of the brain, we find nothing in common with the various theories cited above to explain the cause of hemiplegic contractures.

A possible, though not entirely satisfactory or convincing explanation may be found in the fact that the mechanism of motor-complexes requires the co-operation of the sensory centers. If the sensory centers are destroyed in certain localities—for example, in the occipital lobe—the sensory optic element is cut out of the motor complex, and there results a condition called psychic paralysis, in which the muscles lose their power of volitional contraction, except in reflex acts. The inaction of the limb involved affords an opportunity for certain mechanical forces to operate. Contractures would occur in the implicated members as a result, perhaps, of the predominance of one muscle group over another, in the way described by Lazarus and von Monakow, and, therefore, as a result of a cause independent of increased muscle tone.

This is only a possible explanation of the contractures in my cases, and a more plausible one for the case of apraxia, in which the contractures were unilateral, involving the arm suffering from

psychic paralysis, than in the first case of bilateral contractures, with unilateral lesion commonly found in psychic paralysis.

Causes arising from dermatogenous, osteogenous, tendogenous, and arthrogenous sources may be dismissed without discussion. The contractures in these cases were evidently of central origin.

I do not believe that the small hemorrhage in the right corona radiata in the first case was sufficient to cause a double hemiplegia with bilateral contractures, as it is doubtful whether the motor fibers were implicated at all, and if so, the degeneration involved only some of the fibers of the leg on one side, as far as can be judged from a study of the lesion in the posterior limb of the internal capsule.

The effect of the lesion in the left optic thalamus is doubtful in the first case. It is known that disturbances of the optic thalamus result in the increase of muscle tone on the opposite side of the body (Muratow (22)), and that irritation of the optic thalamus with intact cerebellum produces tonic spasms.

If a lesion of the optic thalamus is an element in the cause of the contractures in my case it would only explain those on one side, and as the contractures were bilateral, it is therefore inadequate, in my opinion, to satisfactorily account for the conditions described.

It might be argued by some that the contractures in the first two of my cases were due to the internal hydrocephalus, but the explanation usually given for the cause of paralysis and contractures in hydrocephalus, *i. e.*, that they are the result of pressure upon the motor tracts, is not entirely satisfactory. I cannot imagine that any pressure upon the motor tracts, sufficient to cause an absolute paralysis and marked contractures, could exist for a long time without causing some degeneration of these tracts, and if the pressure is not sufficient to cause degeneration of these tracts, I do not believe it could cause a persistent total paralysis. Moreover, it is inconceivable that the pressure should affect the motor tracts exclusively, leaving the many other tracts of the brain intact.

Before one can accept the view that contractures in internal hydrocephalus are due to pressure, there must be a number of reports of cases of this sort in which the brain has been cut in serial sections in order to determine whether or not there has been any actual implication of the motor tracts in the brain.

The pathological conditions described in the third case represented, in my opinion, possibly a hindered, or poorly developed crossed pyramidal tract, or partial agenesis, and formed the basis of a possible explanation of the clinical manifestations.

In my previous report of this case I expressed the theory that the poorly developed pyramidal tract, consisting of fine fibers and perhaps also a diminution in the number of fibers, resulted in a lowering of the conductivity of the fibers for the motor impulses from the cortex to the spinal cord. The presence of fibers in the pyramidal tracts I believe presupposed the intactness of cortical cells, or at least, cells somewhere in the cerebrum, and the character of the fibers and cells must have some bearing upon the development of the spasticity which this patient presented.

It seemed to me that when fibers of small caliber are called upon to conduct vigorous motor impulses we would meet with the same conditions as when currents of high potentiality are forced through conductors of small caliber, *i. e.*, increased resistance and imperfect conduction. It is conceivable that the increased resistance offered by the small fibers to the motor impulses could prevent the impulses from reaching the cells in the spinal cord *in toto*, thereby cutting off, partially, at least, some of the inhibitory influence of the cortical centers, contractures arising as a result of the action of the cells of the anterior horns of the spinal cord.

The first case, in my opinion, illustrates—though in a way not yet clear—that contractures may develop as a result of the implication of the sensory tracts independently of the motor tracts.

Lewandowski has already called attention to the influence of the sensory portion of the nervous system upon the causation of contractures, citing the fact that in tabes posthemiplegic contractures are practically unknown, and Sherrington's experience, in which, after cutting the posterior roots, the muscles relaxed more quickly than normal after cortical irritation.

Exactly how destruction of sensory intracerebral tracts causes these contractures is conjectural, but it is clear that they exercise a distinct influence upon their development.

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## Society Proceedings

### AMERICAN NEUROLOGICAL ASSOCIATION

THIRTY-FIFTH ANNUAL MEETING, HELD AT NEW YORK CITY, MAY 27-29, 1909

The President, DR. S. WEIR MITCHELL, in the Chair

*(Continued from page 680)*

#### DISCUSSION ON DR. WALTON'S PAPER.

Dr. Philip Coombs Knapp said that he thought we owed a very great debt to Dr. Walton because, if we accept his views, there will be no need of diagnosis or differentiation in the future. When a patient comes in with headache, disturbances of vision, etc., we need not take the trouble to decide whether it is migraine or brain tumor. When a patient comes in with ataxia and loss of knee jerk we need not distinguish between tabes or alcoholic neuritis. It is going to make neurology very simple. It is also an interesting thing to note the influence of suggestion. It is also interesting to note how well Dr. Walton has succeeded in impressing his own obsessions upon his colleagues at the Massachusetts General Hospital. In his own case, however, Dr. Walton's suggestions have failed entirely to work. As Dr. Prince has said, it does not seem possible to take this proposition of Dr. Walton's seriously. Of course in times past there has been a certain over-differentiation, as when Beard brought forward his category of the various phobias as distinct affections,—the agoraphobias, mysophobias, siderodromphobias, and all the rest of them. There has been in the progress of our science a combination, a bringing together of certain conditions into one, and also at the same time a further differentiation of affections once thought to be single. At the Boston City Hospital they certainly do not discard neurasthenia altogether, although there are very much closer differentiations and distinctions drawn than there were fifteen or twenty years ago. Dr. Walton's own case, which he has just cited here, is a conclusive proof of the error into which he has fallen and the fallacy of the hypothesis which he has just advanced. More careful analysis of the young woman revealing her tendencies to hallucinations and delusions, has shown conclusively that whereas in former days without that analysis it might have been thrown into a dump like neurasthenia, hysteria, etc., more careful investigation has shown there was a development of a psychosis of an entirely different type which demanded entirely different treatment. Of course there are many cases where it is a difficult process to make a diagnosis. It is difficult sometimes to make a diagnosis between general paralysis and neurasthenia, between tabes and neuritis, between brain tumor and an ordinary epilepsy, but it does not seem to Dr. Knapp because the diagnosis is difficult that we should throw up the sponge entirely and say there is no difference at all. There are certainly well defined types of

mental and nervous disease. There are many borderland cases, but the more exact and the more thorough our study the better we can differentiate between them and the better our treatment can be. He disagreed with Dr. Prince in saying it would be going back forty years to accept this arrangement of Dr. Walton's, four hundred and forty years would be nearer the case. He is almost back to the level of the ordinary internist in his diagnosis of nervous diseases.

Dr. Adolf Meyer said we should realize that we are apt to work under a more or less effete dogma, if we live up to the traditional notion that we have to diagnose and name the "case." We cannot diagnose you or you as individuals; that is asking altogether too much of us, but we can diagnose or interpret and size up certain *facts* in a make-up or phase of a case. We always know that there is more than one group of facts in almost every case that we have to handle. Errors are introduced by the habit of trying to classify our patients as cases, instead of trying to classify the facts which we have to handle in each case. If we then in the actual performance of grouping our cases, throw an *individual* as a whole into one group, although he has factors which belong in another group, we simply prejudice our conception of the facts and their relations. The thing to do is to learn to size up groups of facts that we see at work in our cases, and not to identify the patient as a whole with a name which cannot always express even the important facts, not to speak of their working—whether they are of mental or non-mental origin, or acting after the hysterical or psychasthenic or any other type or perhaps in a way for which we have no term. The best thing is to emphasize the facts with which we can *do* something. If, then, we realize that in perhaps 40 or 50 per cent. of these cases for which Dr. Walton wanted to have a name, we have not much cause for glory; let us admit it and use a term indicative of our ignorance without any more presumption than medical etiquette seems to demand. At the same time let us be sure to let those facts in each case come to their rights which are sufficiently plain to figure as a matter for therapeutic action or prognostic and etiological reasoning.

Dr. J. J. Putnam said that the diagnosis of "psychoneurosis" has been used a good deal more in the Massachusetts General Hospital than it is in other clinics. Personally, he would say two things: his own tendency of late years has been to endeavor at least to differentiate a great deal more between the different cases than formerly, while, at the same time, he had continued more or less to use the term psychoneurosis, simply as a convenient heading for hospital classification, realizing that when the records were taken up for further study they could be analyzed a great deal further. We are all, in our search for truth, like boys jumping from one cake of ice to another toward a distant shore. Many of our classifications are made with the distinct assumption that they are to be regarded only as convenient halting places. Dr. Putnam thought really the discussion pointed in two directions, both of which have been indicated already. In the first place, we ought to devote ourselves greatly more than we have done to laying down the essential elements for differentiation. In the next place, we should recognize that we have to deal with "patients," not "cases," and thus with sick people who are sick at the same time in various ways. In that connection he wished to call attention to the work of Dr. Cowles who had pointed out with great insistence that a man might have several forms of psychosis at the same time.

The terms neurasthenia, hysteria, psychasthenia, etc., represent modes of dissolution of the nervous functions, combined with the effects of attempts at readjustment. We should recognize the distinction between these different tendencies and also recognize that several of them may be united in one case.

When any one tendency is present in excess, it may be well to designate the case by the corresponding name, while in other cases it may be better to give a general name which does not commit us to a narrow view. What is really important however is to recognize the pathological and psychological processes that are at stake [at present not easily to be designated by any name]; to see—in imagination and in the light of modern science—what is going on within the depths of the patient's mind. "Diagnoses" of any conventional sort often hinder us in this task.

Dr. C. B. Burr said that the term hysteria was too well established to be legislated or talked out of existence. If one had the patient alone to deal with, it might do to act on the suggestion of Dr. Walton, but unfortunately, the friends are to be considered. A patient is referred to you by another physician. After examination you express the opinion that she has a "psychoneurosis." Having delivered yourself of this, you will presently hear from her friends "Why Dr. ——— said she had hysteria." You try to compromise the matter and make it intelligible to the friends. You say you are in complete accord with Dr. ———, that the difference is one of terms employed. You enter into a lengthy explanation but the situation grows more and more complicated and in the end your opinion falls flat. Dr. Burr thinks that frank differences of opinion are preferable to this; that diagnoses should be carefully made and with as fine discrimination as is possible in every case.

Dr. J. W. Putnam said it had always seemed to him that the great desire to find what kind of disease the patient has may be carried to an extreme, and the tendency should also be to find out what kind of a patient is controlled by the disease. The same symptoms occurring in one individual may lead to much more serious disaster than they do occurring in another patient.

Dr. Walton, in closing, called attention to the fact that his plea was not for merging such diseases as brain tumor and neurasthenia but rather to reserve for such really important questions our effort at classification. His position was not, as one disputant suggested, like that of collecting the diseases of the various viscera under one head, but rather analogous to a protest against subclassifying the cases of disorder of one viscus, as the heart, whose symptoms are those common to all, such as palpitation, anxiety and the like.

It was far from his intention to do away with such diagnoses as hysteria, manic-depressive insanity and hypochondria. His objection was to placing those cases into one or the other category, which really have no distinguishing features.

Dr. Adolf Meyer, of the New York Psychiatric Institute, demonstrated a number of illuminated glass reconstructions of brains, and discussed a case of transcortical sensory aphasia with integrity of the transverse temporal gyrus and of the auditory radiations, and a case of complete word-deafness with destruction of these parts, in striking contrast to Dr. Barrett's case, in which the auditory cortex was undermined by a very narrow slit with remarkable integrity of the transverse temporal gyrus

and its immediate fiber supply. He also drew the attention to a case of softening of the dorsal parts of the thalamus involving Forel's tegmental fasciculi, and with retrograde degeneration of Hösel's bundle between the superior cerebellar arm and the mid-brain root of the fifth nerve behind the decussation of the fourth nerve. In a glass model of the sheep's brain he demonstrated the relation of this bundle to the sensory nucleus of the fifth nerve.

Dr. E. C. Spitzka said there was no discussion on this admirable contribution because there could be none. It was one of the most perfect he had ever seen. It was worthy of the highest commendation.

### THE ORGANIC BASIS OF EMOTIONAL EXPRESSION ILLUSTRATED BY CASES OF INVOLUNTARY LAUGHING AND WEeping

By Charles K. Mills, M.D.

*L'Homme Qui Rit et L'Homme Qui Pleure.* Five categories of cases: (1) Weeping or howling alone present; (2) laughing alone present; (3) laughing and weeping alternated or commingled without lachrymation; (4) laughing and weeping, or weeping alone with lachrymation; (5) persistent griming or *risus sardonius*.

Hypotheses regarding centres and tracts concerned with emotional expression. Von Bechterew's thalamic centres for mimesis. Experimental evidence of the existence of the thalamic centre for involuntary emotion or mimicry. Clinical and clinicopathological evidence. Old and recent literature. Corticothalamic and inhibitory fibres.

Sites of lesions causing involuntary emotion in recorded cases: bilateral lesions of the internal capsule, lesions of the lenticula, of the peduncle and of the bulb. Relations of cerebellar lesions to the syndrome.

Clinical cases of the author, illustrating various forms in which involuntary laughing and weeping occur. Case with loss of emotional expression and hemianesthesia of the right side and ataxia of the upper limb on the left. Cases of lenticular, capsular, thalamic, bulbar, and cerebellar lesion. General conclusions.

Dr. Prince said he thought we ought to feel very much indebted to Dr. Mills for bringing this subject before us because although it is a very large subject it is a very important one, and it is one that ought to be considered, and he knew of no one better able to consider it than Dr. Mills. Attempts have been made by psychologists and neurologists to solve some of these problems, but the problem of the emotions is so large and has so many aspects that it is very difficult. Dr. Prince said Dr. Mills meant us to understand that his attempt is only tentative and offers a working hypothesis. We can resolve the problem which Dr. Mills presents to us into two parts: one of these is the question whether the emotions as psychical states can be localized, and the other is the localization of those organized movements, generally called the mimetic movements, which give expression in one form or another to the emotions. The two are separate questions. He understood that Dr. Mills did not attempt to definitely localize emotion, excepting that it was associated with the function of the frontal lobe, preferably the right. Unfortunately, as yet we have scarcely any definite knowledge of what emotion is, whether it is only a fusion of the cenesthetic sensations radiating from the viscera—the

James-Lange theory—or whether it is something pertaining to general brain activity, or something else. The possible localization of emotion has been discussed of late in psychological circles and particularly by Piéron and d'Allonnes in an animated controversy. The whole question has been left in a chaotic condition. As to the localization of the mimetic movements which give expression to the emotions, we must assume that all such movements must be organized somewhere in the brain. Otherwise our whole conception of the nervous system is unintelligible. Everything goes to show that automatic movements are organized somewhere. The only question is, where? Dr. Mills, referring to the literature of the subject, stated that he will go into it at length in his published paper. For an intelligent discussion, however, of the main thesis it is necessary to refer to some of the work that has been done with a view to determining the functions of the optic thalamus and the other basal ganglia.

As everyone knows, von Bechterew and his associate Mislawski, as a result of extensive experiments on animals, believed that they localized in the optic thalamus the centers for mimetic movements of expression. But, besides this, they concluded that the optic thalamus influenced the motions of the respiration, the heart, the stomach, the intestines, the bladder, rectum and vaso-motor system; it also influenced lachrymation, and so on. These latter movements are very interesting because the same disturbances of the viscera occur as expressions of the emotions, and if the mimetic movements or the emotions, as some have argued (largely on the basis of von Bechterew's experiments), could be localized in the optic thalamus these visceral movements would be expected as thalamic functions. Unfortunately, however, these observations of von Bechterew have not been verified. Pigano, on the other hand, carried out a series of experiments which led him to conclude that the centers for emotional expression are in the corpus striatum. His method consisted in injecting curare into this ganglion. When injected into the anterior portion he obtained movements, tremor, etc., expressive of fear, and, when in the posterior portion, expressions of anger. Hence he would locate emotional expression in the corpus striatum. More recently Roussy has undertaken to reinvestigate the functions of the optic thalamus both by experimentation on animals—the monkey, cat and dog—and also from the anatomical and clinical material found in Dejerine's and Marie's clinic in Paris. He made serial sections of brains and investigated the anatomical relations and lesions. This work was published in 1907. He came to the conclusion that the sole function so far established of the optic thalamus is that of a station in the sensory pathway. He contradicts strongly the localization of movements of any kind therein, whether mimetic or other. He has analyzed the work of others, and, if his experiments stand, the optic thalamus will have to be eliminated as a center for emotional expression. His work seems very careful, but of course it is very difficult for anyone who has not carried on such work to judge it.

Dr. Prince referred to these experimental observations because they have been made so often the basis of theories of the localization of emotion and emotional expression by both psychologists and neurologists, and must be taken into account in any discussion of these problems. Thus Brissaud and Mingazzini have each proposed somewhat similar theories according to which the thalamus is the center for the coördination of movements for laughing and weeping, but is subject to inhibition from the cortex through inhibitory fibers passing through the internal capsule.

If these fibers are destroyed spasmodic laughing and weeping take place. This seems to be Dr. Mills's theory also.

As the matter then stands there are theoretical grounds for believing that the mimetic movements are coördinated somewhere and clinical observation has shown that, in fact, cases with cerebral lesions are not rare in which spasmodic laughing and weeping occur without the presence of the corresponding emotions. The same is true in functional conditions. On the other hand, the evidence is far from satisfactory that the organization of these movements is in either the thalamus or corpus striatum. And even if we assume the correctness of one or the other of these localizations, the inference that either of these ganglia is the seat of the emotions as well, as some have argued, is still more unwarranted. The same is true of the localization of emotion in any particular part of the cortex. Dr. Mills's cases, therefore, though exceedingly interesting, and though they furnish additional evidence of the independence of organized movements of emotional expression, leave the real problem about where it was.

Dr. M. Allen Starr said the subject Dr. Mills had brought forward was extremely interesting, and he hoped that in the review of the literature Dr. Mills would give due credit to Dr. Seguin for the paper he published, and which has been reprinted in his "*Opera Minora*," because Dr. Starr has a distinct recollection of that paper, published in 1879, that almost every fact that Dr. Mills has presented to us to-day is contained in it. It seems very often, in taking up subjects, that we overlook the literature, especially of the past, and are apt to quote authorities within recent years, and neglect work that deserves a certain amount of recognition. Clinically, Dr. Starr has been accustomed to divide cases of disturbances of emotional expression into two separate and distinct classes: first, the cases to which Dr. Seguin called especial attention, of emotional disturbances connected with lesions of the pons varolii, and that may or may not involve the optic thalamus. Dr. Ernest Sachs has made studies on the optic thalamus which are more thorough and convincing than anyone's in the last ten years. Dr. Starr also said he distinguished between cases that show emotional disturbance where the lesion is above the level of the crus where we have distinct hemiplegia, usually transient, but passing off, leaving a lack of emotional control. In this he thought there was more of a psychical element. In other words the individual is sorry for himself, and cries and has much real psychical distress. Or, on the other hand, there are cases of laughing which he finds is nearly as common as crying, where the patient is not only amused but feels amused. There is a second class of lack of control connected with undoubted lesions in the pons varolii, or the medulla oblongata. Dr. Starr said he saw a case on the preceding Wednesday, in consultation, a woman of excellent self control, who had an attack of pneumonia the first of April. During the period of recovery a sudden apoplectic seizure occurred, attended first by sudden loss of consciousness; secondly, by Cheyne-Stokes respiration, an extremely slow pulse and a condition of drooling at the mouth, with some apparent relaxation of the muscles of the face. Since consciousness returned, which it did in the course of an hour, this woman has remained in a condition of very great disturbance of speech due to bilateral atrophic paralysis of the tongue, indicating nuclear disease of fibers coming from the twelfth nerve nucleus as they pass down from the olivary tract. She has a marked ataxia of both hands, not much ataxia of gait, no paralysis whatever; and associated with this a constant attempt on any voluntary movement to cry

and show emotional disturbance. That is undoubtedly a case of localized hemorrhage or thrombus in the raphe behind the pyramidal tracts in the medulla oblongata, not at all unlike a case reported by Spitzka in 1883, one by Senator in 1882, and one by Leyden in 1880 of a localized, limited lesion at the junction of the pons and medulla. This case belongs to the second class of cases of which many examples occur in apoplexy, of crying and laughing which are sure in beginning bulbar palsy. That is a different type, there is no psychical element. The patients don't care whether they cry or laugh. Dr. Starr would make the clinical distinction, as he has done for many years in talking in his clinic, between lesions above the level of the crus producing true emotional disturbance, and below producing mimetic symptoms which are not emotional.

Dr. Ernest Sachs said that during the past year and a half he had been engaged on some experimental work on the thalamus in the laboratory of Sir Victor Horsley, and some of this work may throw some light on the question Dr. Mills has raised.

There is evidently a distinct connection between the thalamus and the cortical facial center, for a lesion in the lower part of the lateral nucleus of the thalamus leads to degenerations which go exclusively to the facial center, while the region dorsal to this sends fibers to the arm and leg centers. Furthermore, his work has shown that only the lateral part of the thalamus, that portion outside of the lamina interna, is connected with the cortex. The median and anterior nuclei are only connected with the caudate nucleus.

The centre median seems to be only an association center among the thalamic nuclei and gives origin to some of the fibers of the posterior longitudinal bundle. The hypothalamus is not intimately connected with the thalamus as heretofore supposed, but bears a much closer relationship to the globus pallidus of the lenticular nucleus.

As to the functions of the thalamus much still has to be done, but certain points already seem to be disproved. There is no evidence of any lachrymation arising from thalamic stimulation, as the Russians under v. Bechterew have claimed. Screaming, when it does occur, is produced when the termination of the fillet fibers are irritated, and this should probably be interpreted as meaning that the current has produced a strong sensory impulse in response to which the animal screams.

The motor phenomena in the median part of the thalamus are mainly concerned with movements of the eyes, usually conjugate in type, and thus may be a superior peduncular response. In closing he wished to thank Dr. Starr for his kindness in requesting him to speak.

Dr. J. J. Putnam said he particularly wanted to corroborate Dr. Starr's opinion. He had seen bulbar patients act in the manner described by Dr. Starr, exhibiting the signs of great emotion, yet feeling none. He referred especially to one gentleman of very strong will, who was gradually dying of bulbar palsy. His case illustrated not only that fact, but another which Dr. Putnam had observed in other cases, that is, that the movements suggestive of laughter came before those suggesting grief. It had seemed to him, while watching this patient, that it was his inability to really complete the movement of laughter which made it pass over into the movement of grief. It was the exaggeration of what we all see in daily life, and which we designate in saying that a person laughed until he cried. There is a fairly close resemblance in some respects between the movements which go with pleasure and those which go with

grief, and one seems to be an intensification of the other. In the other class of cases where one has to do with a lesion in the cerebral hemispheres, the sense of distress or pleasure is certainly much more strongly present in proportion to the forced expression of emotion than in the bulbar cases.

Dr. Hugh T. Patrick said he had been interested in these cases of spasmodic laughter and weeping for about 15 years. While he has not arrived at any definite conclusion as to the location of a lesion which will give rise to this group of symptoms, he has come to one or two conclusions: First, that these phenomena are more likely to occur in bilateral or multiple lesions. He has seen them a number of times in multiple sclerosis and pseudo-bulbar palsy, and in some diffuse lesion cases where no very definite localization could be made. He has had under observation for three years a gentleman injured in an automobile collision, obviously with bilateral lesions. He still has a slight hemiplegia and still has this spasmodic laughter and weeping. Second, one of the principal elements in the phenomena probably is a lack of inhibition. It is nearly always possible to start one of these patients to laughing or crying by appropriate suggestion. If one talks to the patient in a sympathetic or lugubrious tone he will begin to weep, and changing to a jocular vein will start a laugh; and in neither case is it necessary that the patients' feelings comport with his emotional expression. As to whether there are tears shed in this weeping or not, Dr. Patrick said he was rather inclined to think that may be a feature not of the case but of the individual. Probably we all have observed that some shed tears copiously, others relatively in small quantity. Until otherwise convinced we might conclude that cases with profuse lachrymation are such because of a natural corollary function in that individual and not because the lachrymation is a necessary part of the pathological syndrome.

Dr. Charles L. Dana said that the more recent studies of lesions of the optic thalamus lead to the conclusion that it is not the center for forced laughter or crying, nor does it have to do with emotional expression. The phenomena of explosive laughter and crying are associated with lesions of the pons, most definitely, and also with lesions in the lenticular zone. And here the symptoms are often associated with disturbances of speech and a certain degree of jargon aphasia.

Dr. Dana remarked that hysteria in its general sense was only the name given to express certain peculiar reactions of the organism, and did not represent any particular disease, as a rule.

He added, however, that there is a certain group of symptoms which are peculiar in kind and course, and form a syndrome which may well receive a special name. It is characterized often by a sudden onset, with hemianesthesia and hemiplegia, or other forms of sensori-motor paralysis, disorders of the special senses, and a peculiar mental state. This disease is a rare one in this country. The speaker had not seen more than 50 or 60 cases in the whole course of his practice.

Some years ago, in testing the reflexes of this group of cases, he found that in the hemiplegics there was a diminution of the reflexes on the hemiplegic side more often than an increase.

Dr. F. X. Dercum said that several points had been raised in the paper of great interest. Dr. Patrick called attention to the fact that in most cases we have bilateral lesions, but this is not always the case. Dr. Dana spoke of seeing forced laughter in cases of aphasia. Dr. Dercum



has had under observation for some time past a case of motor aphasia with forced laughter; the patient laughs almost continuously, just as do some with bulbar palsy. Here, again, we have probably to do with a lesion involving the lenticular nucleus.

Dr. Mills, closing, said that he was very much pleased that the paper had brought out so much discussion. In regard to Seguin and others, to whom reference had been made in the discussion, he had given full recognition in his paper.

*(To be continued.)*

## PHILADELPHIA NEUROLOGICAL SOCIETY

APRIL 23, 1909

The President, DR. T. H. WEISENBURG, in the Chair

### A CASE OF UNDIAGNOSTICATED BRAIN ABSCESS

By Augustus A. Eshner, M.D.

The patient was a woman, 35 years old, complaining of headache, pain in the back and legs and abdomen, with nausea, vomiting and pain in the left ear. Motility and sensibility were preserved, and the reflexes were normal. There was some mental confusion. The urine contained a trace of albumin and a few tube-casts. There was no discharge from either ear, and no mastoid tenderness. The number of leukocytes in the blood was slightly increased. The Widal agglutination-test yielded a negative response. The patient grew gradually worse, and death finally took place somewhat abruptly. Post-mortem examination disclosed the middle and lower temporal convolutions on the left side to be the seat of an abscess communicating with a sinus in the petrous portion of the temporal bone, and this in turn was continuous with an abscess in the middle ear. The kidneys were the seat of acute inflammation, while myocardium and liver were fatty.

### FOCAL EPILEPSY TRAUMATIC IN ORIGIN DUE TO A VARICOSE STATE OF CEREBRAL VEINS. OPERATION. RECOVERY

By Alfred Gordon, M.D.

Man of 26, fell accidentally at the age of 5. He was then confined to bed for two weeks. A few days afterwards he developed spasms in the left leg. At first they would occur once or twice a week. In each of these attacks he would lose consciousness and at times would bite his tongue.

When examined by Dr. Gordon, there was a slight weakness and flabbiness of the left arm and leg, knee-jerks increased. Paradoxical sign on the left, but no Babinski. There were convulsive seizures, some with and others without loss of consciousness, strictly limited to the left leg.

An osteoplastic operation over the upper part of the Rolandic area on the right side of the skull revealed a varicose state of the cortical veins. These veins were ligated and excised. The seizures disappeared

immediately and there has been no return since the operation on February 3. A paresis of the left arm and leg developed, which however improved. At present the left hand is very weak and shows ataxia and marked astereognosis. The knee-jerks are exaggerated. Babinski sign is present on the left and on the right, but the paradoxical sign has disappeared.

Otherwise the examination is negative. The eye-grounds are normal and the patient's general health is good.

#### DISCUSSION.

Dr. D. J. McCarthy showed a brain from a case of long continued pulmonary tuberculosis and dyspnea. There was a very distinct condition of varicosity confined to the smaller veins which, of course, did not show a distention such as they would show during life and during an operation. Practically all the veinules in the motor portion in the frontal lobe showed this very marked condition of varicosity. In one specimen in the Phipps Institute there was a condition over the face area of marked dilatation and varicosity of the terminal arteries, giving a condition almost of a cirroid aneurism. This condition as it exists in the case of tuberculosis is a result of the same cause. Patients with long continued tuberculosis and persistent dyspnea, which lasts for months at a time, and dams back the blood from the right side of the heart, have this secondary condition of varicosity with the damming of blood in the cerebral circulation.

Dr. W. G. Spiller said that where a person has had repeated convulsions and the brain has been exposed, it is not uncommon to find considerable varicosity, as the result of congestion from the convulsions. It is an effect rather than a cause. Dr. Gordon's patient since the operation has become partially paralyzed, and has also considerable ataxia and impairment of sensation. The sensory symptoms probably were from the impairment of the nutrition of the parietal lobe, as the result of ligation of the veins. While the man has had no convulsions recently it has been only two months since the operation, and any operation on the brain is liable to arrest convulsions for a period. Two months is hardly sufficient time to form an opinion as to the cure of this case. We should wait at least a year.

Dr. Gordon stated he had often seen operations performed where nothing was found, the wound was closed, and the patient became paralyzed, whether there were varicose veins or not. This is quite a frequent experience with him. His patient was totally paralyzed after the operation, but he recovered completely, except in the hand. The sensory condition is confined to the hand. The brain was handled very little.

The operation lasted twelve minutes. The patient presented before the operation a slight paretic condition of the entire left side. Complete cessation after operation for two months after twenty-two years of incessant convulsions permits the assumption that the veins were at fault in this case. Dr. Gordon thought the closure of the skull under the circumstances, without touching the veins, which were immense, would have been a mistake.

Dr. T. H. Weisenburg stated that several months ago there came under his observation at the Medico-Chirurgical Hospital a young man 24 or 25 years of age with the following history: He had Jacksonian convulsions ever since his tenth year. Three years ago he was operated upon by Dr. J. C. DaCosta in the Jefferson Hospital, an osteoplastic operation being

done. In the notes furnished by Dr. DaCosta it was stated that a varicose condition of the vessels of the dura was found, and these were ligated. At the same time Dr. Gordon applied a faradic needle to various portions of the cortex. The man made an uninterrupted recovery and the convulsions ceased for about a year. Since then they have returned and are more severe than ever and in addition there is hemiparesis. A second operation was done over the same site and a large sarcomatous growth was found. After the exposure large veins were in evidence which were found to be only part of the tumor. This case is similar to that reported by Dr. Gordon and shows that a varicose condition of the vessels may be only an indication of a graver condition, and it should not be taken for granted that this is present unless a full exposure is made.

It was also, in Dr. Weisenburg's opinion, a mistake to assert that any operation will cause cessation of epileptic convulsions unless the case is observed a number of years, for as in the first instance referred to, the case was reported as apparently cured.

Dr. Gordon said he recalled the case Dr. Weisenburg alluded to distinctly. There was an angiomatous condition of the blood vessels of the brain. The patient presented in addition to the Jacksonian epilepsy other symptoms. He also had vomiting spells and dizziness. The skull was simply opened in the area supposed to have the lesion. The angiomatous condition was found. Dr. Da Costa thought it not wise to examine the brain tissue beneath and simply ligated. Dr. Gordon's patient was perfectly free from any trouble other than the localized convulsions.

#### A CASE OF CEREBROSPINAL SYPHILIS CAUSING INTERNAL HYDROCEPHALUS AND SYMPTOMS OF CEREBELLAR TUMOR

By S. D. Ingham, M.D.

C. R., white, 42 years; family history negative. Had a chancre at age of 24 years, but gave no history suggesting secondary or tertiary syphilis. Complained for two or three years of pains in arms and legs, unsteadiness in gait, difficulty with micturition, and deafness. His sister stated that he had been mentally dull for five or six years, and had had occasional attacks of headache with nausea and vomiting, vertigo, and sometimes fainting. At the time of his admission to the Philadelphia Hospital his condition was as follows: Muscularly well developed, no motor palsies, no muscular atrophies. Pupils show some inequality and irregularity of outline, reactions present, no choked disc. Tendon reflexes were slightly increased in all the limbs, bilateral ankle clonus, Babinski negative. Slight ataxia in both arms and legs.

The most striking symptom of his condition was the progressive loss of equilibration, at first manifested by inability to walk erect, but leaning backward and quickly coming to a stop. He soon became unable to walk at all, and before his death, about four weeks after admission, could not even sit up in bed, but would invariably fall directly backward, not from weakness, but from loss of equilibrium. The pathological condition found at necropsy was syphilitic cerebrospinal meningitis, especially marked at the base of the brain. The foramen of Magendie was completely occluded by the process, and all of the ventricles of the brain were dilated, especially the fourth, where the pressure had displaced the dentate nuclei and

white matter of the cerebellum. Microscopically, the usual signs of syphilis were found, and, in addition, degeneration of cells in the dentate nuclei, and degeneration and disappearance of many of the Purkinje cells of the cerebellar cortex.

Dr. C. K. Mills stated that Dr. Spiller and he had a case which was reported by them, which presented symptoms very similar to those given by Dr. Ingham. The foramen of Magendie was not closed, as he recalled, but the aqueduct of Sylvius was closed producing symptoms very similar to those in this case.

Dr. T. H. Weisenburg said that aside from the pathological findings this case had been very interesting from the clinical standpoint. The patient had been studied by him a number of months and the most striking feature in the case was the fact that the patient always staggered backward, even when he attempted to sit up. Dr. Weisenburg said that he had never seen in any cerebellar lesion staggering only in the backward direction. This he considered unusual, for while he had seen in other cases backward staggering, it was always in association with a tendency to fall in other directions.

Dr. Spiller stated that he had seen the backward staggering without lateral staggering. In one case in particular, a tumor was found beneath the aqueduct of Sylvius, and the patient had a distinct tendency to stagger backward. When he made an effort to stand up, as in rising from a chair, he would fall backward.

In regard to the case referred to by Dr. Mills the fourth ventricle was not enlarged. The symptoms were caused by pressure on the cerebellum by the dilated lateral ventricles, notwithstanding the tentorium came between.

Dr. Gordon said he had a case where the patient had a tendency to stagger to one side as well as backward. In regard to the cerebellar symptom, called *asynergia*, this is very common. When the patient makes the attempt to move forward, the trunk does not follow the legs and gives the impression of falling backwards. He supposed this had some relation to the remarks made by Dr. Ingham and Dr. Spiller.

#### A CASE OF SPASTIC PARAPLEGIA DATING FROM CHILDHOOD (LITTLE'S DISEASE?) WITH LITTLE OR NO DEMONSTRABLE LESION OF THE PYRAMIDAL TRACTS

By John H. W. Rhein, M.D.

The patient, a man of 71, presented symptoms of spastic paraplegia dating from early childhood. The arms were not involved. The brain and spinal cord showed nothing of importance, except a fineness of the fibers constituting the crossed pyramidal tracts. There was no evidence of degeneration.

Dr. Rhein asked, how can the spasticity be explained when the pyramidal tracts are not degenerated? The presence of fibers in the pyramidal tract presupposes the presence of intact cells in the cerebrum. The character of the fibers and cells then must have some bearing upon the causation of the spasticity. When fibers of small caliber are called upon to conduct vigorous motor impulses do we not meet with the same condition as when currents of electricity of high potentiality are forced through wires of small caliber, *i. e.*, increased resistance and imperfect

conduction? The increased resistance offered by the fibers of small caliber to the motor impulse may prevent the impulse from reaching the cells in the spinal cord in toto, and thereby cutting off, partially at least, the influence of the high inhibitory centers. This was offered as a possible explanation.

Dr. Leopold said that while the hypothesis of paralysis as the result of improper conduction through small fibers may be correct, there is another way in which this condition may be interpreted, and that is from small lesions occupying the pyramidal tract in which they cause no degeneration below, in this manner the conduction is cut off by almost microscopical lesions. He said that he had a case in point which he has been studying; he has found a very small lesion in the pons. The case presented hemiplegia of some duration. Grossly no lesion was discovered, but careful microscopical study demonstrated it. Undoubtedly the conduction was cut off as the result of this small area of softening, causing hemiplegia, and yet below it there was no degeneration.

Dr. A. A. Eshner said he understood Dr. Rhein to say that only the lower extremities were involved in the spasticity. In that event the case differs from the ordinary instances of cerebral spastic paralysis that one commonly sees.

Dr. Gordon said with reference to Dr. Rhein's very interesting and very curious findings that he wanted to recall the history of a case that he himself reported at the last meeting of the Neurological Society. A child of seven years was brought to him for epileptic seizures. The history showed that she had had an attack of hemiplegia at the age of two, and she still presented hemiplegia. She had a hemiplegic gait, a Babinski sign, but no rigidity or contracture of the muscles, and the knee-jerk on the paralyzed side had almost entirely disappeared; there was complete flaccidity on the hemiplegic side. It was difficult to explain this peculiar symptom-complex. In literature he found only one similar case reported, by Long in the *Revue Neurologique*; there were no contractures, no rigidity, no degeneration of the pyramidal tract, but the brain was por-encephalic.

Dr. G. E. Price said in reference to the theory advanced in Dr. Rhein's case, that it could be more readily accepted were it not for the fact that the upper extremities were uninvolved. To accept this theory we would have to believe that the conductivity of the fibers for the upper extremities was preserved, while that for the lower extremities was lost.

## THE CLINICAL PICTURE OF MULTIPLE SCLEROSIS WITH THE PATHOLOGICAL FINDINGS OF ARTERIOSCLEROSIS

By Charles K. Mills, M.D., and William G. Spiller, M.D.

One of the speakers (Dr. Spiller) showed some years ago in connection with Dr. Camp that a mistaken clinical diagnosis may easily be made regarding multiple sclerosis, as the symptoms in a case of cerebrospinal syphilis were sufficiently like those of multiple sclerosis to justify the diagnosis of the latter disorder. More recently he has demonstrated with Dr. Woods, what has also been proven by others, that areas of sclerosis produced by syphilis may exist without any symptoms sufficient to lead to a diagnosis of multiple sclerosis. Dr. Mills and he had recently had another case in which the symptoms of this latter disease were so

distinct that the diagnosis of multiple sclerosis seemed assured until a microscopical examination revealed the error. There are few diseases in which errors of diagnosis are more likely to occur, and therefore clinical data deduced from purely clinical examinations are likely to cause mistakes, if too sweeping conclusions are drawn from them. The authors cautioned therefore against wide-reaching conclusions relating to multiple sclerosis when necropsies are wanting.

The case reported is as follows:

Bridget D., was admitted to the Philadelphia General Hospital, Dec. 19, 1892. The history is somewhat uncertain, but it is probable that the symptoms began at some period before her admission to the hospital. She had done hard work, such as washing. She was a white woman, past middle life. She had coarse tremor of the face, arms and hands. The tremor of the head developed later, as well as the halting speech. The tremor of the head was a combination of vertical and rotary movement. Speech required considerable effort, and there was hesitation before the utterance of each word. Festination was not present, although the patient had a stooping posture. The patellar reflex of the right extremity was normal, but that of the left was almost lost. Romberg's sign was not present. There was no appreciable loss of voluntary power or of sensation. When the patient stood the entire trunk was in tremor, the upper and lower limbs vibrating. There was a coarse intention tremor of the hands and head, in the latter a lateral as well as an up and down movement. The station was worse by closing the eyes. The tremor was less when the patient was lying down, but did not entirely cease.

A note made in 1907 states that the patient had shown signs of mental failure, she had an abnormal appetite, and frequently stole her neighbor's meals, at other times she secreted other patients' clothing beneath her bed, until she had five or six dresses concealed there. She answered questions correctly.

She died of pneumonia October 28, 1907.

The important symptoms in this case were intention tremor and scanning speech, each of extreme type. The tremor was so intense that when she attempted to put the finger to the nose most violent intention movements would occur, and standing would cause an intention tremor of the whole body. The speech was typically scanning and somewhat explosive, the words were jerked out. The patient was very irritable, and avoided examination. She manifested no other symptom of multiple sclerosis, but the scanning speech and intention tremor were so indicative of multiple sclerosis that the clinical diagnosis of this disease was never questioned by anyone who saw the patient.

A microscopical examination of the brain and cord gives the following results: The vessels of the spinal cord, especially those of the cervical region, show pronounced arteriosclerosis. Some round cell infiltration is found in the pia about the vessels in the medulla oblongata, but this is slight even here, and is insignificant in the spinal cord. The nerve cells of the anterior horns are intensely pigmented in the cervical and lumbar regions. Many amyloid bodies are found in the spinal cord. The condition is such as is observed in certain cases of paralysis agitans or senility, and in no way resembles that seen in multiple sclerosis.

Dr. J. Hendrie Lloyd said he had felt very much interested in the subject of senile tremor for a long time. He does not think we have gotten to the bottom of the subject. The case narrated seemed to him to

have been one of rather aggravated so-called senile tremor. She had, it is true, some hesitation of speech, but no nystagmus, no exaggerated knee-jerks. It is not difficult to distinguish such a case from multiple sclerosis. The more difficult thing is to tell just what causes it. Senile tremor sometimes differs very decidedly from paralysis agitans, at other times it resembles it. We have a head tremor more marked and sometimes the slight impairments of speech. When we consider multiple sclerosis, occurring preferably in young women, with nystagmus and exaggerated knee-jerks, and with symptoms of lateral sclerosis more or less marked in most cases, it does not seem that the differentiation of it from the senile type is so difficult. A woman was in Blockley with symptoms at first consisting of almost primary lateral sclerosis. She is now in bed, for she cannot walk. She has highly exaggerated knee-jerks, with a spastic condition of the lower extremities. She has a slight intention tremor, a little suspicion of nystagmoid movements of the eyeballs, and a little slurring speech. This is one of those cases in which diagnosis is at first difficult. She is 36 or 37 years of age, a little beyond the period in which multiple sclerosis develops as a rule.

That you can have syphilitic disease simulating multiple sclerosis is an undisputed fact. Dr. Lloyd believed the statement had been made by some that in disseminated sclerosis there is no lymphocytosis of the cerebro-spinal fluid, and that this may be used as a means of differentiation from spinal syphilis. Recently Raymond reported a case which seemed to be rather typical of disseminated cerebral sclerosis in which he found marked lymphocytosis; so the point does not seem definitely settled.

Dr. D. J. McCarthy said that he had put on record with Dr. Charles W. Burr, a case at the Home for Incurables of disseminated syphilis giving a typical clinical picture of the classic form of disseminated sclerosis. They also recorded a case with no intention tremor, no scanning speech, no nystagmus, only mental defect. In other words unless you have in disseminated disease throughout the cerebro-spinal axis a certain distribution of it, you will not get these symptoms of multiple sclerosis. Exactly what the position of these foci should be has not been determined, probably the pons and medulla so far as the nystagmus and scanning speech are concerned. Dr. McCarthy agreed with Dr. Lloyd that the thing that leads him to a diagnosis is not so much intention tremor, as the fact that these symptoms are associated with a spastic condition of the lower extremities. There are a sufficient number of cases on record in which this spasticity has not been present, in which the condition of atrophy has been presented with a condition of disseminated sclerosis.

Dr. Spiller said that the difficulty in diagnosing multiple sclerosis from other diseases depends on the diffuseness of the symptoms. Multiple sclerosis is a disease which may affect all parts of the central nervous system. Therefore we can readily understand that we may get similar symptoms from syphilis in certain instances. The charge has been made that we in this country do not know how to diagnose multiple sclerosis, that we wait for typical cases such as Dr. Lloyd speaks of, which anyone can diagnose. Multiple sclerosis is by no means always accompanied by spasticity. The patient reported by Dr. Mills and himself had entered the hospital seventeen years ago, and the tremor was not senile. It is well known that Charcot denied the existence of senile tremor.

HISTOLOGICAL CHANGES OF THE SPINAL CORD IN PER-  
NICIOUS ANEMIA APROPOS OF CASE OF DIFFUSE  
DEGENERATION

By Alfred Gordon, M.D.

A man of 48 met with an accident four years ago, resulting in a considerable loss of blood. For three months he was confined to bed. He suffered from dyspnea, vertigo, and general weakness for two years. He then noticed a gradually increasing weakness in the upper and lower extremities, also numbness and tingling sensations in the limbs. At the end of six months there was complete paralysis of the arms and legs, and difficulty in micturition.

Upon examination marked weakness of both arms and legs was found with rigidity in the latter; the knee-jerks were much increased on both sides, Babinski's sign was present on both sides; sensations were diminished in the lower extremities, paresthesia was present in the arms; the sphincters were involved. Hemoglobin was 35 per cent., red cells 2,000,000, leucocytes 3,800. Megaloblasts, normoblasts, poikilocytes were present.

Gradually contractures developed implicating the upper limbs. Sensory disturbances of syringomyelic character followed. Bed-sores soon appeared and the patient rapidly grew weaker.

The spinal cord presented degenerative changes mostly in the lower cervical and upper thoracic segments. Weigert and Marchi showed old and recent changes in the anterior columns, Gowers' tract, direct cerebellar and crossed pyramidal bundles, finally in the posterior columns with exception of the area corresponding to the comma zone of Schultze. A great many vacuoles were found in the degenerated areas. Very few changes were seen in the cells of the anterior cornua. The blood vessels were not altered. The process of degeneration in the lower segments of the cord was less marked, so that in the lumbar portions the crossed pyramidal bundles alone were in a state of mild degeneration; only a few vacuoles were seen in the posterior columns.

The salient features of the case are: the anemia which developed after a profuse bleeding; the spinal cord symptoms which gradually made their appearance two years later; finally the incidental grippe which was followed by pulmonary tuberculosis; the anatomical changes consisted of a diffuse degeneration in the white matter of the cord.

The peculiarities of the case are the presence of syringomyelic symptoms which corresponded to the presence of degeneration in Gowers' columns, the absence of degeneration in the posterior columns below the upper thoracic segment, the presence of degeneration in the anterior columns, direct cerebellar and Gowers' tracts.

The present case militates against the adopted classification of cases of cord changes occurring in connection with pernicious anemia. Considering the various findings in all cases published heretofore, one must conclude that there are no special characteristic features. The variability in the findings is probably dependent upon the degree of intensity of the causative agent and upon its original localization. The pathological process is diffuse and not systemic in character. The poison follows the route of the nerve fibers within the cord without regard to neurone systems.



# Periscope

## Journal de Neurologie

(Vol. XIV, No. 1)

*A Case of Tumor of the Hypophysis without Acromegaly, Mental Troubles and Pathological Sleep.* C. PARHON and M. GOLDBSTEIN.

A girl of 18 years, about whose antecedents little could be learned, except that she had never menstruated, was admitted to the hospital on account of weakness, loss of memory and great somnolence. This latter was so great that she would fall asleep in the middle of her work. Her physical development was good and gave no suggestion of acromegaly, though she was pale, subcutaneous fat was overdeveloped, and her general appearance suggested hypothyroidism. The submaxillary glands were slightly enlarged and the spleen palpable, but otherwise physical examination disclosed nothing abnormal, and the urinary examination was negative. Her extremities were somewhat cyanotic; she suffered constantly from generalized headache and from vertigo, which caused her to walk with short peculiar steps, but showed no paralysis or ataxia. The reflexes were exaggerated; the visual field seemed to be diminished, but neither it nor the senses of taste, smell and hearing could be accurately tested on account of the mental condition of the patient, though hearing seemed normal. She vomited frequently, especially after eating; was constantly in a somnolent condition; was confused when aroused; had loss of memory, and was unable to perform the simplest calculation. Lumbar puncture gave only negative indications and the patient became worse after its performance. She failed steadily and died in deep coma, the temperature rising before death to 40.3° C. At the autopsy a cystic tumor of the hypophysis was found. Under the microscope this tumor was found to be made up of cells having large granular nuclei with pale abundant protoplasm and much connective tissue. The eosinophile cells usually found in the hypophysis were absent and there were numerous hemorrhages. The thyroid gland showed sclerotic alterations, dilated vessels and hemorrhages surrounded by a number of small cells of uncertain nature. The adrenals showed poor development of the glomeruli, and a number of recculated or vacuolated and highly pigmented cells. The ovaries contained chiefly embryonic follicles, but some matured ones; no characteristic corpora lutea. The spleen was very highly vascularized and the pulp consisted chiefly of lymphocytes with a few large mononuclear and polynuclear cells. The other organs presented nothing characteristic. Since in the opinion of the authors acromegaly depends upon a hyperfunction of the hypophysis, and since the tumor presented quite a different structure from the normal gland, this case furnishes no evidence against the hypophyseal origin of this disease. They discuss the relation of the tumor to the pathological somnolence and to the mental changes. There were never any symptoms of great intracranial pressure, hence they do not lay much stress upon this as a causative agent, but are inclined to think rather of a dis-

turbance of metabolism due to the absence of the internal secretion of the hypophysis, and possibly of that of some of the other glands having an internal secretion, as the thyroid, the adrenal and the ovaries showed certain abnormalities, and the thymus was persistent and weighed 15 grammes.

(Vol. XIV, No. 2)

*The Processives.* XAVIER FRANCOIS.

An address to a class of law students, in which the author exposes the chief characteristics of the querulants, using for the purpose of illustration the history of a case of this character which he had been able to follow for a number of years.

(Vol. XIV, Nos. 3 and 4)

*The Eyes During the Epileptic Attack.* A. RODIET, P. PANSIER and F. CANS.

After passing in review the literature of the subject the authors give the results obtained in examinations which they carried out upon some asylum patients. The difficulties of ocular examination, especially the ophthalmoscopic, during the epileptic attack are apparent, and out of 50 cases which they had selected they were only able to get results sufficiently accurate for publication in 5 patients. They studied the pupillary manifestations, its reactivity, the appearance of the fundus, especially as regards the state of fulness of its vessels. From what they were able to observe they conclude that in the tonic phase the pupil dilates and in the clonic phase this dilatation is at its maximum, though at the end of this period slight contraction begins. At the same time there is anesthesia and injection of the conjunctiva. During the period of stertor, mydriasis and immobility of the pupil persist, as does insensibility of the conjunctiva. Before the attack, although there is some difference of opinion about this, it is thought that the retinal vessels are at first in a state of ischemia, then congested. After the access the congestion persists from several minutes to two hours. They have observed the two retinæ unequally congested. The form of this congestion is characteristic, the papilla and the retina remain pale, but the veins are much dilated, tortuous,—especially below—and pulsate visibly.

(Vol. XIV, No. 5)

*A Case of Subacute Combined Sclerosis, Associated with Pernicious Anemia.* GEORGES BOUCHÉ.

Report of a case of pernicious anemia showing a paraplegia, first spastic, later flaccid, combined with ataxia, lightning pains, loss of muscular sense, slight sensory disturbances, and running a subacute course; with some remarks.

(Vol. XIV, No. 6)

*A Case of Tic, Much Ameliorated by the Treatment of Pitres and Brissaud, Combined with Manual Labor.* O. DECROLY.

An account of the case of a young man of strong heredity for nervous disease, unstable and badly brought up, who developed a series of tics, the most troublesome of which was a peculiar barking noise frequently repeated, which much annoyed those about him and prevented him from working. Amelioration and practical cure, by use of the educatory gymnastics recommended by Brissaud, and the respiratory exercises of Pitres,

with later a resort to carpentry as an occupation. While an apparent cure had been effected the author thinks that on account of the neurotic and weak character of the young man a relapse is probable, should he come again under unfavorable circumstances and escape from the firm discipline of his father which seems to have been an important factor in procuring the amelioration obtained.

C. L. ALLEN (Los Angeles).

### Journal de Psychologie, normale et pathologique

(Sixth Year. No. 1. January to February, 1909)

1. Elementary Laws of the Association of Ideas in Mania and Dementia. DELAON.
2. An Anomaly of Parental Affection. CH. FÉRÉ.
3. The Data of Vision. MONNET.
4. Genito-urinary Inhibition. JANET.
5. Symbolization. MAEDER.

1. *Association of Ideas*.—The author studies a number of cases of mania and dementia and attempts to explain the peculiar grouping and evolution of their thoughts, with all their apparent incoherency and irrelevancy upon the basic principles of the association of ideas. He finds that a similarity of word sounds, a similarity of meaning or a mere contiguity of ideas will account for some of the mental manifestations. Though this is true both in mania and dementia, the psychological mechanism of the evolution of the ideas is not the same in both. The excitation of the former stands in marked contrast to the inertia of the latter.

2. *An Anomaly of Parental Affection*.—Féré calls attention to the dangers of the excess of parental love, as well as of the want of it. The former he finds more common among mothers than among fathers. He cites the instance of a mother who wilfully hid and condoned the evil ways of her son, through excess of parental fondness, much to the damage of the young man himself and his family. When the daughter of this mother married, she too showed the same excess of maternal affection for both of her offspring. With the second child it became so unreasonable that no one, not even the father or grandparents were allowed to approach near enough to observe anything wrong or unnatural about the infant. At the end of eighteen months the father insisted that the baby be examined by a competent physician, on account of a passing fever which it had, and to the surprise and chagrin of everyone, including the mother, it was found to be a typical amaurotic idiot.

3. *The Data of Vision*.—This illustrated article upon the physiology of vision has for its main purpose the proving of the fact that education and self-training play a much larger rôle than is generally supposed in the development of complete and perfect sight with the judgments therein involved. The child is born with a crude optic apparatus which it must learn how to use and to correctly interpret its presentations. In this educational process the optic apparatus itself and its working are both greatly improved.

4. *Genito-urinary Inhibition*.—Janet suggests that disturbance of neural inhibition, rather than mere spasmodic contraction of the urethra or compression by an enlarged prostate, should be invoked to explain many

of the disorders of micturition. He adduces several arguments and illustrations to prove this. The genito-urinary apparatus has two separate and distinct functions in spite of its more or less anatomical unity. These functions, the genital and the urinary, alternate in activity, the one remaining quiet while the other is functioning. This is due to the central nervous mechanism, involving alternate inhibition. When the normal equilibrium between these functions is broken or lost, one or the other function becomes the dominant one under all circumstances, or both functions may occur simultaneously. Janet, suggests that some cases of writer's cramp and of dysphagia may be explained in the same way on the basis of a disturbed equilibrium between alternate and mutually interacting inhibitory functions.

5. *Symbolization*.—Maeder emphasized the importance of studying and analyzing symbolical language so often used in hysteria and dream states. Symbolization is common in popular speech as well as in states of mental alienation. The author relates one or two interesting cases wherein an apparent incongruity of ideas and meaningless jargon became fairly intelligible when a painstaking psychoanalysis had been made, and it was shown that the patients' thoughts and language were revolving, symbolically, around certain sexual experiences.

(Sixth Year, No. 2. March-April, 1909)

1. *Passive Joy (Beatitude) and the Theory of the Sense of the Agreeable*. M. MIGNARD.

2. *Investigations upon the Sensibility of the Conjunctiva*. O. POLIMANTI.

1. *Passive Joy (beatitude)*.—Mignard has studied some eight cases of idiocy, imbecility and dementia, and by comparing their physiological and psychological manifestations with those of the normal human being, he attempts to throw some light on the origin of the feeling of pleasure or satisfaction. He examined especially the passive form of joy (beatific state) exhibited by his patients and notes that there are two forms of delight, the active and the quiet.

The weakness in the Lange-James theory of the cause of the emotions as well as in the theory of the intellectualists, is that they do not account for the feeling of delight when on the one hand there is no unusual peripheral vasomotor activity or on the other excess of intellectual activity. There is a pleasure, a joy, a delight, even a high degree of emotional excitement of an agreeable sort that may spring from extreme passivity of the physiological and psychological processes. In no case, Mignard argues, does the sense of pleasure originate in the mere process of activity but in the completion of the act. A function or purpose that is accomplished or is looked forward to as being completed gives thereby the feeling of delight and satisfaction. In this way both passive and active joy can be accounted for. Activity leads to more or less completion of the act; passivity stands for completion, either of acts in the past or of acts not yet revealed in the future. One who knows of no deed that he ought to accomplish is, emotionally, in the same frame of mind as one who has completed a task. Both are satisfied. This explanation of the sense of the agreeable is more in consonance with the older theories of philosophy than are some of the more modern explanations. It accounts more satisfactorily than do the latter for the high sense of

delight shown by some of the most inactive individuals, physiologically and mentally.

2. *The Sensibility of the Conjunctiva*.—By the use of various saline solutions the author has tested the sensibility of the conjunctiva and has come to the conclusion that one cannot speak legitimately of a specific sensibility of the conjunctiva to varying degrees of salt solution.

METTLER (Chicago.)

### Zentralblatt für Nervenheilkunde und Psychiatrie

(January 1 and 15, 1909)

#### 1. *Pedagogic Therapy for Juveniles with Nervous and Mental Diseases*. E. HESZ.

Hesz recognizes three main groups of nervous and mental affections peculiar to the juvenile: (1) the nervous, neurasthenic and hysteric; (2) psychotic states, (3) moral defectives (Moral Insanity). Idiots and epileptics are not included. The age limit is 20-23; the most frequent occurrence of the mental disease is at puberty and down to seven years. The pedagogic treatment should be carried out in the hospital for the insane. The therapy should include gymnastics, out-door exercise, agricultural pursuits, preparation for school, attention to body, prevention of masturbation, and discipline within normal limitations. The patients *should not* be allowed to read books on sexual topics. Since philosophy, ethics, and religion do not appeal to morally defective individuals, in such instances cultivation of habit should be attempted. The main object of the pedagogic therapy should be directed towards the establishment of a practical view of life.

#### *Apropos of Criticism of Freud's Teachings of Compulsive States*. M. SKILAR (Jan. 15).

Skilar maintains that compulsive ideas are not transformed from suppressed, repeated reproaches, and moreover they are not sexual in nature and are not traceable to some traumata in early childhood. He believes that compulsive ideas do not contain an emotional element and should not be regarded as a defensive neurosis. The reviewer feels that the author has not examined Freud's theories very carefully.

(February 1 and 15, 1909)

#### *Prison-delusional Ideas of the Degenerates*. BLEULER (Feb. 1, 1909).

Bleuler offers a brief criticism of Birnbaum's monograph—*Psychosen mit Wahnbildungen und Wanhafte Einbildungen bei Degenerativen*, Halle, 1908. He holds that most of the cases Birnbaum described show the landmarks of the symptomatic picture of dementia præcox and maintains that they should not be classified in a group by themselves as proposed by Birnbaum.

#### *Apropos of Mania in Childhood*. MAX LIEBERS.

Liebers describes a case of manic depressive insanity occurring in a child of five years of age who had a bad heredity. The psychosis developed at the end of a severe attack of diphtheria and was characterized by distractibility, elation, flight of ideas, and psychomotor unrest. Within

a year complete recovery occurred. The author discusses briefly the differential diagnosis between manico-depressive insanity, imbecility with excitement, etc.

*Contribution to the Psychology of Dementia Præcox (Schizophrenie).* M. WULFF (Feb. 15).

Wulff analyzed a case of dementia præcox according to Freud-Jung method. His patient—a young American woman of 35—presented the symptoms peculiar to a dementia præcox reaction. In the analysis three important complexes were demonstrated: (1) the love affair with her brother-in-law and the ungratified desire of being loved; (2) a marked declination of the homosexual component especially in relation to her cousin; (3) the sin complex; the main point of her delusional idea—the murder of her mother. Upon these complexes the symptomatology of the clinical picture was explained. Some of her dreams were also analyzed which aided the elucidation of some of the symptoms. Wulff maintains the Freud-Jung attitude that a carefully analyzed case of dementia præcox reveals no true dementia as it was heretofore understood, but the so-called absurd ideas are perfectly rational and intelligible to the patient. He holds with Bleuler that Schizophrenia is a more appropriate term than dementia præcox.

*Apropos of Periodic Mutism in Serial Productions.* A. KNAUER (March 1).

Bleuler and Heilbronner were the first to demonstrate that in the disturbance of speech center habitual serial productions are present in spite of the fact that spontaneous speech is abolished. Cases in which the ability of expressing serial productions was lost, and speech reaction retained, are not on record. The author reports the following case: His patient was 39 years of age, a female, and for the past ten years has had seven severe attacks of mania and depression. In her last attack she was very much depressed, retarded and stuporous. She did not speak spontaneously and only upon questioning she would answer in a low monotone. When she was asked to give the alphabet, she commenced with A, B, C, D ——— K, L, M, N ——— R, S, T ——— Y, Z. In counting from 1 to 20—1, 2, 3, 4 ——— 7, 8, 9 ——— 13 ——— 15, 16 ——— 20. Months—Jan., Feb., March ——— Nov., Dec. The other Sommer's tests were with the same results. The author discusses various theories which attempt to explain this peculiar condition, and concludes that this pathological phenomenon could be explained on deficient apprehension, and inefficient self-observation and attention.

*Generation during Intoxication.*—Hoppe states that alcohol exerts a direct influence on the genital organs and it is excreted by the seminal vesicles during the act of copulation. Statistics and experiments on animals show that alcoholic offspring tend toward degeneracy and marked mental inferiority. The exact condition of generation during intoxication could be studied only experimentally on animals.

*The Significance of Trauma for the Origin of Brain Tumors.* KARL BUCK. (March 15).

Buck reviews the literature of the traumatic etiology in brain tumor. He examined fifty-one cases of brain neoplasms in the Tübingen Psychiatric Clinic and found only in nine cases a history of trauma. In four

injury to the scalp occurred when brain tumor symptoms were manifested. In the other five cases trauma apparently acted as an etiological factor and especially in one the traumatic influence was striking and indeed with the support of anatomic evidence. The exact relation of trauma to the development of brain neoplasm and with regard to subsequent anatomic process is an extremely interesting study but at present no satisfactory solution can be given.

*Konrad Ferdinand Meyer.*—Lange criticizes Sadger's recent pathography of K. F. Meyer and maintains that the diagnosis in his case was manic depressive insanity. He bases his diagnosis on the cyclothemic heredity and on the fact that Meyer had several attacks of mania and melancholia. Sadger analyzed the case of this poet according to the Freud method, and declared that Meyer had an ungratified sexual love for his mother and from 1887–1888 he had hysteria and from 1892 he was afflicted with melancholia. From the latter he made only an incomplete recovery. Moebius regarded Meyer's case as dementia præcox and Hesz considered it constitutional depression till 35, and from 92 melancholia (involution) which terminated in a recovery with defect. It is interesting to note that so far biographies of K. F. Meyer lack good material for a reliable pathography.

M. J. KARPAS (Zurich, Switzerland).

### Revue de Psychiatrie et de Psychologie Expérimentale

(January, 1909)

1. Confusion and Dementia. TOULOUSE and MIGNARD.
2. Conscious Hallucinations. VALLET and FASSON.

1. *Confusion and Dementia.*—This is the second article. The first was abstracted in this Journal for August. This article deals with the establishment of a method of mental examination and outlines a series of questions to determine the state of lucidity which is defined as the function by which the subject comes to a real, clear, exact immediate consciousness of his own state, of objects and of their state, of their mutual relations, and of their relations with the subject.

2. *Conscious Hallucinations.*—The description of a case with partially retained clear consciousness and a state of dissociation.

(February, 1909)

1. Epilepsy in Senile Dementia. MARCHAND and PETIT.
2. Litigious Non-Delirious Insane. BROSSOT.

1. *Epilepsy in Senile Dementia.*—The authors conclude: Epilepsy may be observed in the course of senile dementia as it may be observed in the course of other forms of dementia. Epileptic accidents are rare; they seem especially to appear in the last stages of senile dementia. The convulsive accidents present the classical characters of epileptic attacks; some clinical particulars that have been pointed out are such as one observes in *epilepsia tardiva*. We have never found, in our subjects, vertiges and absences. The epileptic attacks have never been followed by post-epileptic phenomena. Disturbances of language are often associated with senile dementia and epilepsy; these troubles are not in relation with localized lesions in the language zone and result really from the demented state.

The cerebral lesions of senile dementia with epilepsy consist of superficial, diffuse sclerosis with profound alterations of the tangential fibers and foci of sclerosis in relation with cerebral atheromasia.

2. *Litigious Insane*.—A very brief report of two cases.

(March, 1909)

1. General Paresis and Symmetrical Asphyxia of the Extremities.  
NAUDASCHER.

1. *Paresis and Asphyxia of the Extremities*.—A report of two cases of paresis with associated symmetrical gangrene. The report is made primarily because of the seeming rarity of this complication of paresis. In one case there were no gross lesions of the vessels; in the other there was an obliterating endarteritis. The authors do not claim a relationship of cause and effect between paresis and gangrene.

WHITE.

MISCELLANY.

ON BLASTOPHTHORIA. (Germ Deterioration.) Forel and Juliusburger.  
(*Zeitschrift für Sexualwissenschaft*, Vol. I, no. 6.)

Based on many observations of psychiatrists on human beings as well as on a number of experiments on animals, Forel believes that we can undoubtedly say that quantities of ethyl alcohol taken into the organism in any form and allowed to act for some time can produce changes in the germ cells which determine many degenerations in the descendant. These changes are very multifarious, they can range from a simple not very marked nervous disturbance to an anomaly and deformity, and may even lead to the production of embryos incapable of living. In his works on the brain and nervous system ("Hygiene der Nerven und des Geistes," 1903) as well as in "The Sexual Question," the author designates these manifestations as blastophthoria (injury of the germ plasm). The author then shows the connection of blastophthoria with general heredity: (1) Heredity consists in the transference of the individual and form of character of the parents to the child by means of the energy of the nuclear plasm of the germ cells. During fructification there results a union of the hereditary qualities of both cells for the formation of the new individual. The hereditary energies of the germ cells are those which R. Semon calls "the hereditary Mneme."

(2) As soon as any stimulus changes or injures the qualities of the nucleoplasm of the germ cells there results a lasting change in the hereditary mneme. This change which the author calls blastophthoria or germ deterioration causes many extraordinary anomalies which influence the embryonal development of the various organs of the individual in so far as they originate from germs which underwent a blastophthoric influence, say through alcohol: (3) Hereditary degenerations result for the most part from blastophthoric processes. The blastophthoria can attach itself to the inheritable mneme of the germ cells and thus preserve itself for many generations by the usual hereditary transmission without a new stimulus of the original blastophthoric influence. Still at the end of many generations the normal atavistic tendency (tendency to regeneration) of the specific heredity seems to show a tendency to become victorious, but only if the blastophthoric influence ceases to act in the descendants: (4) Physical and chemical forces like cold and heat, which, accord-



ing to Merrifield, Standfus, Fisher, etc., change the development of the embryos, the influences of which can adhere hereditarily, seem to act like blastophthoria: (5) The congenital disturbances which depend on the influence of the fruit itself form a kind of transition between the injuries encountered by grown-ups and blastophthoric influences; but it is impossible to state how far they are hereditary. By means of the hereditary transference of defects and variations blastophthoria forms in its turn a transition from embryo disturbances to normal heredity, and can not always be clearly distinguished from it.

Juliusburger then gives a brief explanation of "the Mneme" afore cited: "The energetic situation in which an organism exists at a given moment represents the determinations under which it actually lives or the factors which actually influence it. The energetic influence is in itself the stimulus. The cessation of an energetic influence is not equivalent to the withdraw of a mass of energy. The first is never to be directly designated as energetic influence, that is, it is not a direct stimulus, although indirectly by detours it can at times occasion new energetic combinations and thus produce real influences. The withdrawal of energy is also an energetic influence, and hence under certain conditions it is well able to act as a stimulus. The condition of the organism before the entrance of the stimulus is designated as the primary state of indifference, while the condition to which the organism returns after the cessation of the stimulus is designated as that of the secondary state." In a great many cases it can be demonstrated that the irritable substance of the organism is permanently changed after the action and cessation of a stimulus, and after its return into the secondary state of indifference. Semon designates this effect of the stimulus as its engraphic effect, because it engraves and inscribes itself into the organic substance. The alteration in the organic substance thus effected he calls the engram of the concerned stimulus, and the number of engrams which an organism possesses its sum of engrams. The inherited sum of engrams must be distinguished from those acquired by the individual. The manifestations resulting in the organism through the existence of a certain engram or of a sum of the same, he designates as mnemonic manifestations, and the sum total of mnemonic capabilities of an organism he calls the mneme. Engraphic influences may extend beyond the phase of individuality to later phases of the continuous series of development, and may be inherited: every organism must contain many such engrams which were transferred to it from its ancestral generations. The inherited engram is the product of a stimulus which has acted on the ancestral generation. The inherited mneme is the sum of such inherited engrams. Juliusburger also remarks that the engram-theory is very important in the analysis of psychic disturbances, especially in psycho-analysis in the sense of Freud and in conjunction with the sejunction theory of Wernicke. He concludes as follows: "We will gain a profound insight into the processes of the traumatic neuroses, hysteria, dementia præcox, and many other psychic disturbances. Instead of crowding them into the procrustean bed of a schematic nomenclature it will be of greater interest to conceive them in the spirit of the psycho-analysis, the engram and the sejunction theory."

A. A. BRILL (New York).

LOVE, SUICIDE, and CRIME. Lombroso. (*Zeitschrift für Sexualwissenschaft*, Vol. I., No. VII.)

Lombroso gives statistics which among other things confirm Madame Stael's saying that to the man love is almost always merely an "episode," an "anecdote," while to the woman it is the most important event in her life's history. Men possess a stronger and profounder feeling for friendship, whereas in women, though it may be more lasting, it is superficial. Many suicides result because the lovers can not possess each other. This is physiologically determined by the fact that love is the result of a kind of elementary elective affinity reinforced by a great pleasurable sensation, and the molecules of the one organism are as it were in need of the other, and hence cannot endure a separation. Many women commit suicide because they wish to be buried in the same grave with their husbands, examples of which are the widows in Malabar-India who have themselves buried with their dead husbands, and many noted examples in ancient history, as well as many suicides of our modern times. Five per cent. of all suicides are due to love mania, to an insuperable force which so often ends in double suicides. The bearer of such an aggregated love often shows the traits of the man of honor rather than those of the criminal. The latter usually present a very peculiar, almost mongolian physiognomy, having a rather sparse beard, an especially accentuated frontal eminence, prominent cheek bones, and often asymmetrical features, while the features of the former can not be distinguished from those of a respectable person, indeed most of them present a smiling mildness corresponding to a purity of mind. The author then gives a number of interesting examples showing that all such crimes were committed on the spur of the moment when all the other feelings were deadened by the immense passion of love which broke through all the inhibition of reason. Such persons are distinguished from others by the saltatory, almost insane excitability, especially in love affairs. In contrast to the common murderers who evince a cold apathy for the crime, the lovers immediately after the crime has been accomplished experience the most marked feelings of regret, and often to expatiate their crimes commit suicide. They never try to prove an alibi or deny their crimes; they never flee from justice, but allow themselves to be arrested and immediately confess their acts, indeed they often exaggerate things in order to alleviate their pains and their consciences. The reason leading to the crime is not the mean one found in the common murder; it is almost always a pure love combined with rights and duties which was betrayed and demeaned by ridicule and defamation. For these reasons such crimes are not long premeditated, nor are they committed in out of the way places or during the night. They are executed on the street, in daylight, a few hours or minutes after the occurrence of the event occasioning it. They are executed without ambush and without accomplices, even with unsuitable weapons, like a stone, scissors, teeth or finger nails. Heredity plays a great part in such cases. In a great many of the author's cases there was some insanity or some other taint in the parents. They were indeed those unfortunates in whom the passions of love and jealousy become so markedly exaggerated that the psychiatrist remains helpless, being unable to distinguish clearly the violent love from insanity. These excitable, perhaps insane persons who are honorable at heart, and whose crimes excite our compassion should not be mentioned in the same breath with those who are born for crime, who show their sad histories in their features and in the formation of their skulls, who

use the love mania as a cloak for their premeditated and cold-blooded crimes. Some women who kill their children usually show a spotless previous history, they generally commit the crime without much premeditation and without assistance, and in prison they evince an honest repentance. They often commit the crime in a manner leaving no doubt as to their irresponsibility or perfect insanity.

The author then discusses sexual crimes of rape and homosexuality, and then asserts that the refined habits of living of our times contribute considerably to the excitation of sensuality. A very important factor is the steady increase of alcoholic consumption. "It is a recognized fact proven by statistics that with the increase of wine consumption all crimes of rape increase." Moral crimes increase from year to year in civilized countries. With the growth of intelligence and refinement of living there is an increase in the wishes and the forces of the impulses, but at the same time there is also an increase in the difficulties for gratification. "Marriage, the highest aim of love, continues to become more difficult to attain, or contradicts the laws of natural selection. Wealth becomes decisive in the face of the power of beauty and health. The difficulties of divorce do not help a little to preserve such an unnatural union." From this mysterious conflict of mental progress and increasing sexual impulse some of the crimes take their origin. If violence is offered to one or the other side of human nature it avenges itself through the fruit of crime. To do away with such crimes divorce should be made easier, and money marriages decreased. Society should place the brunt of guilt and expiation on the seducer rather than on the illegitimate mother, or what would be better would be to think of the whole thing more charitably. The author finishes with these remarks: "In conclusion I wish to say that all crimes committed through true love should be judged as mildly as possible, for they are always accomplished by the delicate breath of their first and everlasting origin of the sweetest and holiest intoxication of human passions. And though we cannot all excuse these crimes we should not disclaim to it our understanding and our deepest sympathy." Throughout the article the author illustrates his assertions by numerous interesting cases and statistical tables. The article should be of interest not only to court experts but it could also be read with benefit by social reformers.

A. A. BRILL (New York).

THE CENESTHOPATHIES. E. Dupre and P. Camus. (*L'Encephale*, 1907, August, Vol. 11.)

These authors desire to constitute a clinical type comprising the well-known cases where the affections of the internal sensations dominate the clinical picture, whether or not they are complicated by temperamental reactions in the form of obsessions, hypochondriasis or delusions. They emphasize the duration and the strangeness of the sensations of which the patient complains and illustrate their thesis by six uncomplicated cases of cenesthopathies in various situations. They point out the importance of diagnosing this condition from hysteria and neurasthenia, and emphasize for distinction that these disordered sensations are rather harassing than painful and that they are not modified by the general health of the patient or by psychotherapy; nor have they apparently any organic basis. From neuralgia, they can be distinguished by the absence of tenderness on pressure and by the nerve-injection method of Pitres. They

can be distinguished from the habit pains of Brissaud by their clinical evolution and non-obsessive character. To diagnose them from hypochondriasis is less easy; but in principle, the latter patients interpret their sensations delusionally, whereas the cenesthesopaths merely describe them as well as they can and do not believe them to be of extraneous origin. They are neither desperate or resigned, hoping always for improvement; they are not unduly preoccupied nor egocentric; and they keep a certain social activity and power of affection in spite of their torment; they do not show ideas of negation nor of enormity, immortality nor grandeur. The authors promise in a further contribution to study the evolution, prognosis and treatment of the syndrome they illustrate by these six examples.

TOM A. WILLIAMS (Washington, D. C.).

**HYPERHYDROSIS IN DEMENTIA PRÆCOX.** Antheaume and Mignot. (*L'Encephale*, 1907, August, Vol. II.)

This note describes the finding of severe hydrosis in over 25 per cent. of cases independently of all emotion, exertion or herpetic temperament. The palms are the chief seat of the secretion; and as the skin is cold, the clammy "fish-like" hand is manifest. "It generally accompanies the catatonic type." They report two cases in which there were paroxysms of sweating of the whole body, which soaked the sheets. The sweat was inodorous; temperature and pulse were normal; there was no predominating sadness or other emotion. In one of the cases the phenomena quickly disappeared, leaving no secretory abnormality; while the other, two years later, still showed palmar hyperhydrosis and cyanosis. The authors emphasize the occurrence of this phenomenon in the stuporous form and in the earlier stages of dementia præcox, and that the other vaso-motor phenomena of this disease also occur in this phase. They note that Régis and Marandon de Montyel have pointed out similar paroxysms in paresis.

TOM A. WILLIAMS (Washington, D. C.).

**SOME CONSIDERATIONS AS TO THE OCULAR SYMPTOMS OF EPILEPSY AND HYSTERIA FROM THE MEDICO-LEGAL POINT OF VIEW.** P. Pansier, A. Rodiet, F. Caus. (*L'Encephale*, 1907, August, Vol. II, p. 88.)

In an attempt to establish some certain signs capable of differentiating epilepsy from hysteria these authors show the easiness of simulating an epileptic attack, recalling how even Esquival was deceived when Calneil did so. Even the dilatation of the pupils can be simulated by such a midriatic as cocaine; and Kovalevski has reported three instances where the pupils could be controlled voluntarily. Many persons too possess very wide pupils. Ophthalmoscopic examination takes us no further, for it is much too difficult to be practicable during a fit. The authors believe that the field of vision can on the contrary enlighten the observer, and believe with Abundoes that it is contracted after an epileptic fit; for they decide that while an extremely contracted visual field can well be simulated, that it is not possible to so simulate a slight contraction; and they cite in support of their opinion (evidently founded upon the classic notion of hysteria) the case of a soldier whom Bechelonne believed to be a simulator of somnambulism, as well as of contracted visual fields which became normal after a confession of simulation. The authors believe that Bechelonne's reasoning in this case would convert all hysterics

into simulators, as regards this symptom; and they hold that the real simulator shows a dislike and dread of the perimeter in any case, and with Wilbrant think that long practice is needed to imitate contracted visual fields. They, however, seem to be unaware of the researches of Bernheim and Babinski who now-a-days, by avoiding the naïf methods of former observers, never find contracted visual field of hysterical genesis. They discuss monocular polyopia, but on account of its inconsistency they have to rely chiefly on the visual field. In support of their opinions they cite a case of an alcoholic neurotic who after a sudden decompression suffered from pains in the limbs and paroxysms of dimness of vision. Depending upon the inversion of the color fields and polyopia, the mobility of the patient, and upon the passing hypoesthesia of the cornea, conjunctiva and spasmogenic zones, they made a diagnosis of traumatic hysteria on account of their belief—"that there is hardly any other affection which could show these signs in the absence of grave symptoms." Even the authors, however, confess that the passing amaurosis has been partly due to the compression; but while admitting the man's alcoholic habits they do not lay sufficient stress upon them in the interpretation of the sensory symptoms, not even stating the condition of the deep sensibility, and they lay too much stress upon the nervous heredity and the hasty temperament of the patient, and also entirely neglect the influence of toxemia upon the oscillations, which produce so many fallacies in the examination of the sensibility in general, and particularly the visual fields, as is well known to every neurologist who has worked at experimental psychology. In conclusion they allude to the tenacity of restricted fields in certain hysterics and believe it to be analogous to the *amblyopia ex non usu* in cases of strabismus.

TOM A. WILLIAM (Washington, D. C.).

CASE OF DEJERINE'S THALAMIC SYNDROME. B. CODOS (L'Encephale, 4. May 1909, p. 468).

A woman, 47 years of age, with alcoholic and syphilitic ancestor, but of good health, and mother of healthy children, first noticed a heaviness of the head, slight dizziness and irregularity in her walk. She then would fall without any loss of consciousness, or convulsions; she then noted visual hallucinations, became hemianopic, and was afraid she was going to die. She continued working, though for three months the symptoms gradually increased in prominence. A fire took place at this time in a neighbor's house, and that day she fell as before, but her entire left side became feeble, and she dressed with difficulty and could scarcely walk. She then noted pains in her left arm and formication. The hemiparesis then commenced to improve, and at the time of reporting the two sides are almost equal in strength. The sensory symptoms were then on the increase, vasomotor flushing, hot and cold flashes being added. At time of examination the patient showed a typical thalamic syndrome as described by Dejerine and Roussy.

JELLIFFE.

POLYNEURITIC SYNDROME—ANTERIOR POLIOMYELITIS—IN GASTRIC ULCER. Klippel and Pierre-Weil (L'Encephale, 4. May, 1909).

Duménil, as early as 1864, showed the possibility of visceral polyneuritis, and in French literature at least many contributions are to be found relative to this type of affection. The cause of gastric ulcer remains very

obscure, and the finding of two cases of gastric ulcer associated with polyneuritis called the attention of these authors to the condition. Polyneuritis, secondary to gastric ulcer, to these authors evolves with certain characters which are worthy of notice, especially since tabes with gastric crises is to be carefully separated from polyneuritis with gastric ulcer crises. The history of two cases is given, too extended to permit of résumé, but worthy of being read in the original. Both were very similar. had continuous pains in the stomach, with paroxysmal increases in violence; they came on at the age of 36 in one and 37 in the other; they were accompanied by vomiting, reddish tinged and abundant. They also had troubles of motility, of sensibility and loss of tendinous reflexes coming on some time after the gastric symptoms. There were pareses in all four extremities, the loss of cutaneous as well as of tendon reflexes being marked; and there were painful nerve trunks and tender muscles. There was no Argyll-Robertson pupil, and no ataxia. Urinary disturbances were also lacking. Alcoholic history was excluded, and other intoxication as well; all other etiological moments were absent, carcinoma, nephritis, diabetes inclusive.

The authors contend that the gastric ulcer was responsible for the polyneuritis. What is the explanation? Two hypotheses are reviewed. The possibility of the increased activity of small doses of alcohol, and the increased facility of absorption of other toxic products. Pathologically the authors are of the opinion that the anterior horns of the cord are involved as well, thus implicating the entire peripheral motor neurone.

JELLIFFE.

HEMATOMYELIA ET MYELITIS. E. Medea (*L'Encephale*, Vol. 4. May, 1909, p. 441).

The etiological relation of hematomyelia and myelitis has been the subject of much active discussion and the author, leaving aside the question of traumatic hematomyelia, hematomyelia by compression, spontaneous hematomyelia, reports a case of flaccid paraplegia of gradual onset, in a healthy non-syphilitic adult of 38 years of age, who six weeks previously suffered from a small contusion of his foot with the production of a small abscess which gave him no trouble after a few days. He had total paralysis, loss of all sense modalities with superimposed hyperesthetic zone; yet there was a continuous sense of burning in his trunk and limbs. Lumbar puncture was negative, cytologically and bacteriologically. He died in two months. The cord showed two small hemorrhagic areas at the level of the sixth and ninth D.; an area of hematomyelia which involved the dorsal cord in its two last segments, and an infiltrating meningo-myelitis with dilatation of the blood vessels, perivascular infiltration, necroses, körnchenzellen, swelling and destruction of axis cylinders, etc. The author is of the opinion that the myelitic process preceded the hemorrhage in his case. As to the cause the author comes to no definite conclusion. He excludes syphilis, but does not explain the myelitis which he describes as being of bacteriological origin.

JELLIFFE.

## Book Reviews

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DIE SEXUELLE NOT. Dr. Fritz Wittels (Avicenna). C. W. Stern, Wien und Leipzig, 1909.

"Sexual need arises as a result of the disproportion between what the desire wills and what it may gratify," is the author's definition of his title, and this small work, largely founded on Freud's teachings, expounds his individual doctrines on the general problem of the adjustment of the sexual life.

The general curiosity of the entire world on matters sexual is evidenced by the phenomenal mass of literature that clogs the show windows of the medical centers of all the large European cities. The present volume is a modest and serious contribution to this array. It contains much of interest, and probably will serve a useful, as well as a harmful purpose, according to the soil in which its roots happen to grow.

JELLIFFE.

EINFÜHRUNG IN DIE LEHRE VOM BAU UND DEN VERRICHTUNGEN DES NERVENSYSTEMS. Prof. Ludwig Edinger. Leipzig, Verlag von F. C. W. Vogel, 1909. M. 6.

This splendid book of 100 pages, 161 illustrations, and 1 chart has been developed from a course of study on the anatomy of the nervous system which Prof. Edinger recently gave at the Neurologische Institute, Frankfurt am Main. It consists of fifteen lectures: (1) The methods of investigations of the central nervous system; (2) The structural elements; (3) The structure of the nervous system. Physiological; (4) A survey of the human brain; (5) Nerves, roots, spinal ganglia; and reflex apparatus of the spinal cord; (6) Reflex and conductive apparatus of the spinal cord; (7) Medulla oblongata; (8) The pons; (9) Cerebellum; (10) Midbrain; (11) The optic nerve, the ganglia and fibers of the midbrain; (12) Forebrain: I. olfactory apparatus and striatum; (13) Forebrain: II. Neencephalon; (14) The cortex and the fibers of the forebrain; (15) The connection of the forebrain with other regions, corona radiata and internal capsule.

Professor Edinger presents this difficult thesis in a clear and lucid style and remarkably well covers the ground of this enormous subject in such a little space. It is an extremely valuable addition to the anatomical library and so far it is not replaceable by any other book of its kind either in English or German. The busy student who has no time to devote to the author's two large volumes (*Nervöse Zentral-Organ*) will find this abridged edition very useful and helpful. It is to be most heartily recommended to the profession.

M. J. KARPAS (Zürich, Switzerland).

DIE PRINZIPIEN UND METHODEN DER INTELLIGENZPRÜFUNG. Von Prof. Dr. Th. Ziehen, Berlin, S. Karger.

In his excellently lucid and didactic style Ziehen discusses the general methods of obtaining a fairly accurate summary of the intelligence of the average individual as he is met with in the psychiatric clinic. The short paper of 60 pages further gives a precise and valuable outline of the actual methods in use in the psychiatric clinic in Berlin, methods which he has elaborated and made practical for every day psychiatric needs. The mature as well as the beginning psychiatrist can study it with profit.

JELIFFE.

JAHRESBERICHT ÜBER DIE LEISTUNGEN UND FORTSCHRITTE AUF DEM GEBIETE DER NEUROLOGIE UND PSYCHIATRIE. Redigiert von Dr. L. Jacobsohn, in Berlin XI und XII Jahrgänger 1907, 1908. S. Karger, 1909.

With each new volume of this Jahresbericht the feeling of admiration grows that it can continue to be so well done and offer so much of value to the neurologist and psychiatrist. It grows larger each year, the digests are fuller, there is increasing judgment shown in the choice of those abstracted and it may be said that practically nothing of value escapes.

We venture to pronounce it the most valuable work in the two specialties that is published and even if one refers to it more or less systematically the need for far inferior summaries vanishes. It should be in every state hospital library of the United States if nothing more than a stimulus as well as a silent rebuke to those who would make so little of their great opportunities.

The debt of gratitude that alienists and neurologists owe to the publisher is faintly expressed in the subscription price.

BROWN.



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